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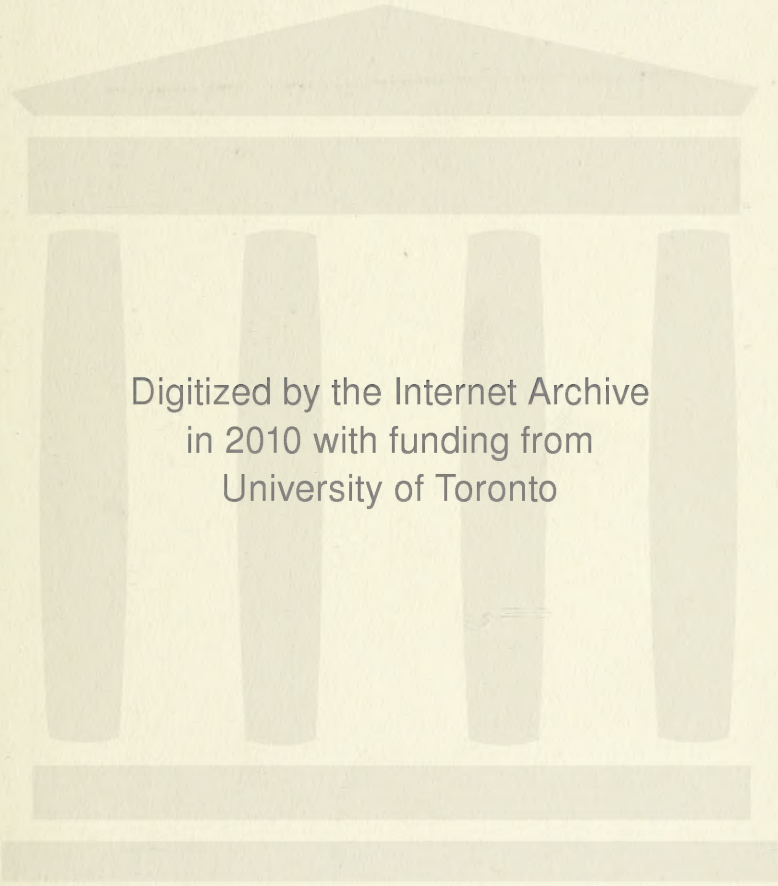


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THE Montreal Medical Journal

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No. 1.

ORGANISMS NORMALLY PRESENT IN THE CONJUNCTIVA.

BY

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Assistant Surgeon to the Eye and Ear Department of the
Montreal General Hospital.

The following report upon the organisms found in the healthy conjunctiva is based upon the examination of 140 cases, which was made in the Royal Victoria Hospital, Montreal, during the years 1902-03. It also includes an examination of all the literature upon the subject, to which I have had access.

The bacteriology of the conjunctiva, both in health and disease, is a subject of interest and importance to ophthalmologists. A knowledge of the organisms of the diseased conjunctiva is important because of its relation to diagnosis, treatment and prognosis. A knowledge of the bacteria of the normal conjunctiva is of value because of its relation to the methods of ophthalmic surgery.

The conjunctiva, with its moist surface continuously bathed with lachrymal fluid, closely associated with the nasal mucous membrane, constantly exposed to infections in various ways, offers every inducement to the lodgement of micro-organisms. It seems indeed, one of those parts of the body, which form a bacteriological home, ready and easily accessible. It has been established that numerous harmful, as well as harmless, bacteria are constantly present in the normal conjunctival sac. The researches of Sattler, Fick, Micheal, Weeks, Koch, Morax, Axenfeld, have clearly established that fact. Gallenga first studied the normal conjunctiva, and reported his findings to the Italian Ophthalmological Congress in Genoa in 1886. The next year came reports from Petresko, Leber, Gombert, Gifford and Sattler. Fick, who examined forty-nine healthy eyes, found the conjunctival sac sterile six times. In another series he found the sac sterile thirty-six out of fifty times. He isolated the *Straphylococcus aureus*, *Micrococcus can-dicans*, *Streptococcus*, and *Sarcina lutea*. Bach wrote of twenty-seven

different varieties of bacteria, which he had isolated from one hundred normal conjunctivæ. Thirteen of these had not been seen before. Gayet demonstrated the presence of the *Staphylococcus aureus* in the healthy conjunctival sac. Gombert isolated twelve species of bacteria from the normal conjunctival sac. Marthen described sixteen varieties of cocci, and two of bacilli, which he had observed in the healthy conjunctiva. He saw the *staphylococcus aureus* and *albus*, but not the *Streptococcus*. Franke found *Staphylococci* ten times out of one hundred and fifteen observations. Morax had not found the *Streptococcus* in the normal sac. Foote in ninety-two eyes examined found the *Staphylococcus albus* twenty-two times, *citreus* five times, *aureus* once, *Bacillus subtilis* once, unknown bacilli eight times, negative results thirty-nine times. Lachowicz found in sixty-three eyes examined only four times the *Staphylococcus albus* and but once the *Streptococcus*. Still later valuable papers have been published by Eyre, Hildebrand, Bernheim, Marthen, McFarland and Kneass, and Griffith.

Eyre's work I have followed closely; so I shall describe his methods here. His work consisted (1) To determine the average conjunctival sacs which were sterile (2) To determine the presence or absence of the common pathogenic organisms. (3) To test their pathogenicity on the rabbit's cornea.

His method was to stroke gently the surface of the conjunctiva, especially the lower fornix, with a sterile platinum loop; and, with the fluid thus obtained, to inoculate a tube of nutrient bouillon. In another series he adopted the swab of cotton wool, and with it he inoculated a tube of serum, and then put the swab in a tube of bouillon. He says: "The exact position from which the conjunctival fluid is taken is of importance. When one everts the lid by gentle traction with the forefinger of one hand, a small quantity of fluid may be noticed in the lower fornix immediately below the caruncle. Into this he dipped his loop or swab, reasoning that the tears, after washing over the whole surface of the conjunctiva in the performance of their duty of flushing out the conjunctival sac, collected here with their cargo of bacteria and *débris*, before passing through the puncta on their way to the lachrymal sac. Therefore, fluid from this site would contain a larger proportion of organisms than that taken from any other part of the conjunctival sac."

Eyre examined one hundred and fifty conjunctivæ, and found seventy-five sterile. During 1902-03 at the Royal Victoria Hospital, I undertook the examination of a series of normal conjunctivæ. The method was as follows: Having gently drawn down the lower lid the

palpabral conjunctiva was gently stroked with a sterilized platinum loop, until a loop full of lachrymal secretion was obtained. Tubes of agar, bouillon and blood-serum were then inoculated, and placed in the incubator, and twenty-four hours later they were examined. The cases taken for examination were patients coming to other departments at the hospital, orderlies in the hospital, and medical students. All cases of hyperæmia of the conjunctiva were rigidly excluded. Of the one hundred and forty cases examined, forty gave negative results. The organisms isolated in the one hundred positive cases were as follows:—

<i>Staphylococcus pyogenes albus</i>	48 times
<i>Staphylococcus epidermis albus</i>	9 “
<i>Staphylococcus pyogenes aureus</i>	2 “
<i>Streptococcus pyogenes</i>	16 “
<i>Bacillus xerosis</i>	42 “
<i>Bacillus</i> of diphtheria group.....	1 time
<i>Sarcina lutea</i>	1 “

As will be seen from this table the *Staphylococcus*, *Streptococcus* and *Bacillus xerosis* were frequently found. Most of the negative results were, in the first fifty cases inoculated, and were from cases where the irritation of the lid did not give rise to the usual flow of tears. Where I obtained a good loopful of lachrymal fluid I invariably obtained growths. Throughout the experiment I used the platinum loop, believing it to be cleaner, and more accurate than the swab.

The percentage of positive tubes was large, and I attribute this to the media used. The bouillon and agar I made after Abbot's method, by using beef instead of beef extract. This agar I found an excellent medium both for the pyogenic organisms and for the *Bacillus xerosis*. The latter has been found by others to grow best on blood-serum media; the growth appearing after thirty-six or thirty-eight hours. Often the agar would show the *Streptococcus* as fine white points over the surface, with here and there a large colony of *Staphylococcus*.

The cause of the great variation in the results obtained by different observers must surely lie in the difference in technique and media.

Trousseau, after cleaning the conjunctival sacs with sublimate solution (1-2000), found bacteria still present. In twelve cases where cataract extraction was performed, and where he was able to examine the conjunctival secretions, he found pus in which five times he isolated *Streptococcus*, six times *Staphylococcus albus*, and once the *Staphylococcus aureus*. In spite of this in no case was there wound infection.

On the other hand conjunctivæ where no bacteria could be found

have given a more or less large percentage of infections (Morax, Trouseau, Franke, Bach).

Franke found the bacillus xerosis only once. Bach never found it, while Axenfeld found it constantly. Gasparrin claimed to have found the pneumococcus in eighty per cent. of the cases he had examined, while scores of others have never met the pneumococcus in the normal conjunctival sac.

All the results have been similar, however, in that large numbers of organisms have been isolated. The results show that in the normal conjunctival sac there are both harmful and harmless bacteria, that the different forms of staphylococcus, and streptococcus, are frequently present, that we must always consider the possibility of the pneumococcus, the Koek-weeks bacillus or the diplobacillus of Morax-Axenfeld being present.

These organisms may be unable to injure the normal membranes, but allow them access to an abraded cornea or line of incision, and they become the source of troublesome infection.

Axenfeld comes to the following conclusions:

I. The normal conjunctival sac is very often infected with pus-producing organisms, and the bacillus xerosis is constantly present.

That virulent micro-organisms are seldom found, but there is the possibility of their being present, especially the pneumococcus.

Eyre concludes:

I. The conjunctival sac frequently contains micro-organisms extremely varied in character, which may, or may not, be pathogenic.

II. The conjunctival sac of any individual may be sterile at the particular moment an observation is made.

III. The sterility of the conjunctival sac is due to the mechanical flushing of its mucous surface by the lachrymal secretion, aided perhaps by the bacteriacidal action of the fluid.

My experience has been that in the great majority of normal conjunctivæ, the ordinary pyogenic bacteria and the bacillus xerosis are present.

I take much pleasure in here recording my thanks to the Governors of the Royal Victoria Hospital, whose generosity enabled me to do this piece of work.

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MONOLOCULAR DENTIGEROUS CYST OF SUPERIOR MAXILLA.

BY

CHARLES COWEN GURD, B.A., M.D.,

Montreal.

(Patient shown and paper read before the Montreal Medico-Chirurgical Society, 24th November, 1905.)

The term Dentigerous Cyst is limited in its application to cysts which arise in connexion with developing teeth, or teeth, which though their development has been completed, are retained within the substance of the jaw. In the majority of cases they are connected with permanent teeth, and in some instances with supernumary teeth, and often in connexion with some one tooth as the third molar or canine.

While teeth which lie buried in the jaw do not by any means invariably give rise to irritation, in a certain number of cases these retained teeth cause a cyst to be developed around them with bony walls. On this account many mistakes have been made and portions of jaws unnecessarily removed.

These cysts, as a rule, are composed of a thick, soft membrane, and outside this a bony shell. The tooth generally has its crown projecting into the cavity while its root is buried in the cyst wall, though rarely the whole tooth lies free. The cyst is usually filled at first with a clear, glairy fluid though later this may become infected. As a rule the cyst gives rise to a distinct local enlargement of bone, and when situated in the upper jaw the antrum is very likely to become involved.

The etiology of the condition is variously explained: (1) We know that a fluid normally collects between the enamel and the tooth capsule;

this gradually increases in quantity, the contiguous bone is removed to make room for it, and the cyst finally bursts and is obliterated by the advancing tooth. When deeply situated in the jaw neither of the above may occur, and a tumour results. (2) The cyst may be formed, due to cystic degeneration caused by the irritation of the erupting tooth on the surrounding tissues.

The tumour, as a rule, grows slowly and is painless. The face of the tumour is rounded and hard, and may be smooth or lobulated. It usually occurs before the age of thirty years. The diagnosis is not difficult when there is absence from its proper place of one or more permanent teeth, or presence of temporary teeth on one side with permanent on the other. The treatment is to remove the retained tooth.

This patient, L. H., is a boy aged 13 years; his occupation, driver of a milk waggon. When first seen, on May 8th, 1905, he complained of a deformity of the face due to a swelling about the upper jaw on the left side. Although this deformity has been present for some time, as the growth had been very gradual and at no time painful, and as the boy lived in the country, no physician had been consulted.

The patient states that he first noticed a slight swelling of the upper jaw in the summer of 1904, and that this had been gradually increasing in size until the present deformity resulted. On three separate occasions, twice during last summer, and once in the spring of this year, he had noticed a sudden slight increase in the swelling, accompanied by a feeling of tension in the tumour. This in a few days was followed by the discharge of a small quantity of rust coloured fluid, with relief from the feeling of tension.

The patient is an exceptionally healthy boy of good muscular development. On the left side of the face, a marked deformity is visible. This is due to a filling up and protrusion forwards of the normal concavity in front of the malar and below the orbital bone. This is especially marked in the lower part, so much so that the lips cannot be completely approximated on this side without difficulty. Besides the actual deformity, the main peculiarity is due to the partial eversion and displacement of the upper lip on the left side. This is better brought out when the patient talks or smiles.

On external palpation the tumour is smooth, rounded, hard and insensitive, and about the size of a small orange. On examination of the mouth the swelling is seen to begin just above the margins of the bicuspsids on the left side. On internal palpation it is found to be smooth, rounded and more or less resilient, giving the sensation of a thin layer of bone over a fluid cavity. It is quite insensitive except on deep palpation.

On examination of the teeth the canine on the left side is found missing, while that on the right is projecting through the alveolus slightly posterior to the line of the other teeth. This is very well shown in the beautiful cast which was made for me by Dr. J. B. Morison.

A probable diagnosis of Dentigerous Cyst having been made, I thought it advisable to have x-ray photographs taken in order to locate the missing tooth. These were taken by Mr. Watson of the Montreal General Hospital. The first consists of a lateral view of the skull. Due to insufficient exposure, however, even the teeth normally placed show but poorly, and in view of the deep burial of the displaced tooth, it is not to be wondered at that it does not show in the plate. At Mr. Watson's suggestion I next had a film exposed over the teeth and base of the tumour. Again we failed to find the missing tooth, as it was situated about one inch above the line of the other teeth. The film, however, shows a space between the incisor and the bicuspid where the missing tooth would normally appear.

On June 30th, 1905, being convinced that my diagnosis of Dentigerous Cyst must be correct, I operated on the patient in the Western General Hospital. An incision was made over the base of the tumour just above the roots of the bisucpids, the knife passing through a tissue having the feel of cartilage. Quite a gush of a clear, viscid fluid occurred.

The finger was introduced and found to enter a cavity where, about an inch and a half above the line of the teeth and half an inch to an inch internally, a tooth could be felt projecting into the cyst. This was easily pried out with a chisel and removed. The cavity was then lightly curetted and packed with gauze.

The patient was operated on at 2 p.m.; he left for the country about 6 p.m., and served his milk round as usual at 4 a.m. the next day.

The tooth appears to be a perfectly normal canine tooth, the crown of which was projecting into the cyst.

The subsequent treatment was the dressing of the cavity at required intervals. The cavity took much longer to close than I had anticipated and the patient was only discharged as cured about October 15th.

The patient is of interest only in proving the fact that the deformity due to such cysts is most readily and permanently removed. All that remains now is a slight thickening of the superior maxilla and a short healed sinus a quarter of an inch in depth at the site of the original incision.

THE BEST TREATMENT FOR PATIENTS IN THE TUBERCULAR, PRE-TUBERCULAR AND IN THE EARLY STAGE OF TUBERCULOSIS.

BY

J. W. FLINN, M.D. [McGILL]

Prescott, Arizona

After long and mature deliberation I decided not to write a learned and scientific dissertation on tuberculosis for this meeting, for two reasons. The first is, I could not do it if I would; the second, you probably would not understand it if I could. Such being the case, I shall endeavour to offer you something suited to our limited capacities; to temper the wind to the shorn lamb; to feed you as babes and sucklings should be fed. Moreover, having cut ourselves loose from the trammels of the very learned, we shall not feel bound to observe that accuracy of thought and nicety of expression that should be characteristic of the scientific mind, but shall, the rather, consider ourselves at liberty to indulge in even extravagant forms of expression, when they seem best fitted to impress truths that appear to us important.

In these latter days the profession seems prone to forget that Medicine is an art as well as a science; that it is concerned not alone with the attainment of a knowledge of disease, but also with the practical application of that knowledge in the consulting room and at the bedside. We hear a very great deal nowadays of "laboratory methods" and "original research." Men delight to speak of microtomes, staining methods, cultivation tubes, germ colonies and microscopical appearances. They forget that the business of the rank and file of the profession is not to be learned, but to be practical.

Far be it from me to cast a slight on the real men of science in the profession; the men who, by years of painstaking research, have done so much to rescue us from empiricism, and, at least, point out to us the direction in which rational treatment lies. And yet although we have, by the aid of these men, progressed so rapidly in our knowledge of the Bacteriology, Pathology and diagnosis of disease, is it not a fact that treatment, the *raison d'être* of the whole science, has been sadly neglected? Are the methods of treatment actually in vogue to-day so much ahead of those of half a century ago? One sometimes wonders if, after all, we have improved so very much on the treatment of a

practitioner of the 16th century, who said, "First I physicks them, then I sweats them, then if they wants to die I lets them."

A few weeks ago one of our guests said to me, "What you medical men in Arizona need is a good laboratory." Gentlemen, a laboratory is the very least of all our needs. What we do need is a few men with a limited knowledge of medicine and a large fund of "common sense." In other words, what we need is, not so much, to know more of medicine as to make better use of what little we do know.

You will notice that in the title of this paper I have used the expression, "the best treatment." As the treatment is the best, one would naturally conclude that it is limited in its application to the few who can afford to take it. Such, unfortunately, is the case. And yet, if you will stop and consider for a moment, you will perhaps come to the conclusion which I reached a few years ago, that it is this few who are greatly in need of treatment.

During the past twenty years there have arisen in different parts of this country, large and well equipped hospitals and sanatoria for the treatment of tuberculosis. Following in the footsteps of Trudeau, the American pioneer, in this class of work, quite a few medical men have succeeded in having sanatoria established, where tubercular patients of limited means may, for a nominal sum, get the most approved form of treatment, under the constant care of a physician. More recently the attention of our governments is being directed to this work, and in not a few states and provinces these institutions are being maintained in whole or in part by state aid. In short, the indigent tuberculars and those of limited means bid fair to be moderately well provided for in the next decade.

On the other hand, the very wealthy are quite able to take care of themselves. A person of this class can, on the first appearance of this disease, take his physician, his family and servants, go where he finds the best climate, lease, buy or build a suitable residence, and live amid the most favourable surroundings, under the constant care of his own physician.

But what of the unfortunate individual who is neither pauper nor millionaire? What provisions are being made for his comfort and care? Take, for example, the case of a prosperous business or professional man, in whom this disease has been discovered in its incipency. He is advised that he must give up work for a year or more, place himself in the most suitable environment, and receive the very best of care. He prepares to leave home, possibly accompanied by his wife and child, and

calculates that he can spend only, say, from one hundred dollars (\$100.00) to five hundred dollars (\$500.00) per month during his absence. Where shall he go? In what part of all this country can he find the accommodations he needs?

He does not care to go to a sanatorium for tuberculars, more especially one maintained in whole or in part by charity. Very probably he would not be received if he did. His physician advises him to go West. Their ideas of the West are about as definite as are ours of the moon. After consulting numerous railway guides, they at last decide on some particular town, and thither the poor unfortunate flees. He arrives in the country tired and depressed, and after having run the gauntlet of the various boosters, which the up-to-date physician considers a necessary part of his armamentarium he is forced to the conclusion that he is an outcast on the face of the earth, that this small world has no place for him. He investigates the boarding houses. He finds the rooms small and stuffy, the food poor, badly cooked and mussy. He thinks of keeping house, but finds houses scarce, rents high and help impossible to get. In the end we will likely find him a hotel in one of the so-called health resorts, in a room which admits little fresh air and less sunshine, and surrounded by people of every class, all suffering from the same disease in all its stages. In the dining room he finds a meal of six or seven courses, not one of which he is able to relish. Left to his own care, in surroundings such as these, is it any wonder he does not improve?

This man will serve as a type of the class to which I refer, and the treatment of which I wish to discuss to-day. We shall endeavour to place him in pleasant, comfortable quarters, adapted to the needs, in a suitable climate and outline for him what seems to us the best form of treatment, and in so doing we shall practically be giving a history of the locating, building, equipping and running of our little resort, Pamsetgaaf, on the outskirts of this town.

Our first duty is to find a suitable climate. In trying to do so we cannot do better than start with Osler, who, in his classic work on medicine, says that the requirements of a suitable climate for tuberculars are pure air, maximum sunshine, equable temperature, good accommodations and food; the first letters of which words form the name which we have chosen for our resort, "Pamsetgaaf." That this is, in the main, correct is admitted by all. That pure air, maximum sunshine and good accommodations and food are essential requirements is denied by none. On the other hand, whether an equable temperature is essential or even

beneficial to early cases is, I think, very doubtful. No less an authority than Prof. Burney Yeo is quoted as having said,¹ "that the most important climatic element for the cure of consumption is a daily variation in temperature of more than twenty degrees, which acts on the organism in a way to produce conservative reaction against further bacterial invasion."

Without pretending to understand just exactly what Prof. Yeo means, we can at least see that it is very hard to find a combination of absolutely pure air with an equable temperature anywhere except on the sea. As it has been abundantly proven that we do get the very best results on the deserts and in the mountains, where the daily variation of temperature is very considerable, we are, I think, justified in concluding that an equable temperature is not an essential requirement for our suitable climate.

In fact, while we are of the opinion that tuberculars in the later stages should all be sent to an equable climate, we think with Yeo, that a considerable daily variation in temperature is of marked benefit to those in the early stages.

But there is another requirement of our suitable climate for early cases, the consideration of which I have purposely left to the last, because I think it is the most important, and wish to deal with it at greater length. I refer to altitude. It seems to me that, theoretically, the most potent argument in favour of the high altitude treatment of tuberculosis is the undisputed fact that altitude is the one geographical condition which is naturally antagonistic to the disease. Even Osler, who is not an advocate of the high altitude treatment, says, under the head of "Geographical Distribution":—"The disease exists in all countries. Italy and England suffer alike, and the disease is very prevalent in the West Indies and the South Sea Islands." (In all of which, by the way, there is an equable temperature.) " Altitude is a more potent factor than latitude. In the high regions of the Alps and Andes, and in the central plateau of Mexico, the disease is very rare. Mountainous countries such as Switzerland have a very low death rate from tuberculosis." We may add that what is true of the high plateaus of Mexico, is doubly true of the mountainous regions of Arizona. The older practitioners here tell us that thirty years ago, the disease was practically unknown in Prescott. That this immunity is due to altitude and not to better general environment is shown by the fact

¹ Journal American Medical Association, Jan. 28, 1895, page 299.

that¹ "in South America and other places the natives are crowded together, favouring contagion, and have food not adapted to proper nutrition; still, the rate from tuberculosis is very small, as compared to the rate of deaths from this disease among the same people living at a lower altitude, although other conditions, except the factor of elevation, are the same."

That altitude is an important factor in the treatment of tuberculosis is no new idea. So long ago as 250 A.D., Celsus wrote:—"Soon as a man finds himself hacking and spitting on rising in the morning, he should immediately take possession of a cow, and go high up into the mountain and live on the fruit of that cow."

In more recent times, Dr. Herman Weber was probably the first to advocate the high altitude treatment of tuberculosis. His experience was largely of Davos Platz, in the Swiss Alps, where the altitude is just the same as ours here in Prescott. His conclusions agreed with those of his American followers, among whom may be mentioned Drs. S. E. Solly and Charles F. Gardiner, of Colorado Springs.

Dr. Solly, who has had a very large experience with this treatment, gives us some very interesting statistics, in his article on climate, in Hare's "System of Therapeutics." He has collected reports of several thousand cases, treated by men like Weber, Williams, Trudeau and himself at high and low altitudes. In averaging the results obtained by these men, he found that, in the first stage 20 per cent. were cured and 44 per cent. benefitted in low climates; while, in the same stage, 62 per cent. were cured and 84½ per cent. benefited in high altitudes. He says:—"The moral taught is that a consumptive treated, in an open resort in an elevated climate, has three times as good a chance of recovery as has one treated in an open resort in a low climate, and twice as good a chance as one treated in a sanatorium in a low climate. In prescribing a particular resort for a case of consumption, the application of this moral, however, is dependent on many minor points, that cannot be here described, but the broad truth remains that of all climatic factors in the treatment as well as in the prevention of phthisis, elevation is by far the most powerful of them all."

The question now arises, in what way do high altitudes affect tuberculosis? I cannot do better than quote from a paper by Dr. Gardiner,² in which he records the results of some painstaking and rather extensive investigations carried out by himself, as to the bacteriological condition

¹ Gardiner, the American Journal of the Medical Sciences, Feby., 1898.

² Ibid.

of the air at high altitudes. He found the air outside of the towns and the ranches absolutely sterile and germless above four to six thousand feet. He says:—"The point of interest now comes up as to what factor in a dry, elevated climate confers to such a degree, immunity from tubercular infection. . . . This climatic influence, that also favours recovery from consumption, is no doubt composed of many factors. Very briefly, they can be stated as follows:—The tubercular germ, distributed as dust, is much more likely to lose its virulence, exposed in a climate where the sunshine is so constantly present and the air is so thin. The air-cells of the average lungs are more used, more brought into healthy action, at an altitude of six thousand feet. The increase, as told by the spirometer and by chest measurements, is very marked in new-comers to the dry, elevated climate; and it follows that organs so exercised, both by increased ventilation and by increased blood supply, do not so readily become a suitable medium for the growth of tubercular bacilli. The blood itself is markedly changed at six thousand feet altitude. It has been shown by Egger and Paul Bert in the Andes; Muntz, Vicault, Koeppe and Woolif in Europe, that the blood in individuals living at six thousand feet and upward above the sea is increased in specific gravity, with also an increased number of red corpuscles and an increase of hæmoglobin, giving the blood greater power to absorb oxygen; and, with all this, also an increased muscular power of the heart, thus insuring to the blood in several ways an increased germicidal power, and what is probably more important a stimulation of tissue change—all of these conditions of the blood being antagonistic to tubercular infection.

The tonic of altitude and cold nights is, too, a stimulant of decided value to the nervous system, much as strychnine acts, by increasing the appetite, etc. There is also the dryness to be considered, the absence of moisture in the air itself, being well known at any considerable altitude, the dryness of the soil probably being the more important of the two. Bowditch, Buchanan, Pepper, Trudeau, Elliot—all have shown that the relation between damp soil and phthisis is a constant one: and, no doubt, some subtle influence exists by which our dry regions, such as Colorado, etc., with sandy and gravelly soil, exert an effect on the extension of tuberculosis.

A word as to those who advocate a moderate elevation in the treatment of this disease. They are men who have lived, or are living, at sea-level, and have noticed the advantages of a moderate elevation over the lower altitude; but have had no experience whatever in the

high altitude treatment. I have yet to know of a man, of any considerable experience in high altitude treatment, who does not consider it superior to that in lower climates in early cases.

Personally, after ten years of fairly active practice, three and a half years of which were spent on the sea-coast, three on the Arizona desert at a moderate elevation, and three and a half here in Prescott at an elevation of 5,300 feet, I am fully convinced that the majority of pre-tuberculars and those in the early stage do much better at a high altitude; while practically all of those in the later stages do much better in the lower climates.

These, then, we consider the requirements of our suitable climate, altitude, pure air, maximum sunshine with good accommodations and food.

Mr. W. Vaughan,¹ of Montreal, who recently spent eighteen months in the West, dividing his time about equally among Castle Creek, Hot Springs, Pamsetgaaf and Colorado Springs, has the following to say of Prescott and its climate:—"Prescott, altitude 5,320 feet, with a population of about 5,000, is a prettily situated mountain town, 150 miles north of Phoenix. It is well built, and possesses up-to-date conveniences, including an infant street car service and a Sisters' Hospital.

. . . Prescott has an advantage, climatically, over the other cities I have mentioned (Phoenix and Tucson) in being an all-the-year-round resort. The temperature in the hottest months, July and August, is thoroughly enjoyable, while the winter days are bright and sunny. The air is, at all times, more bracing and tonic than at lower altitudes in the Territory. The maximum summer temperature is about 95° to 98°, and the mean, for the months of July and August, 73° and 70° respectively. The summer nights are deliciously cool, and a blanket is always needed. The mean temperature for the coldest months, January and February, is 34° and 38° respectively. The nights during this season are quite cold, with a mean minimum of about 18°, but the daily maximum temperature varies between 50° and 60°. Both the cold and the heat are tempered by a very low relative humidity, and the patient is untroubled by sand-storms. During 1903, the precipitation amounted to 16.74 inches of rain, falling chiefly in short, sharp thunderstorms in the summer season. There was also a total fall of 18 inches of snow (unmelted), which, under the influence of the bright sunshine, very quickly disappears. The climate of Prescott challenges comparison with that of Denver and that of Colorado

¹ Montreal Medical Journal, February, 1905.

Springs. Thirty feet higher than Denver and 750 feet lower than Colorado Springs, it has an annual mean temperature of 53°, or some 3° higher than both. The summer temperatures are very nearly alike, but Prescott enjoys a less severe winter; its average wind velocity is considerably lower, and its relative humidity is less than half of that of either of the other two places. Its percentage of possible sunshine is also higher. In 1903 Denver had a total of 199 clear days, 105 partly cloudy and 61 cloudy; whereas Prescott had 248 clear days, 96 partly cloudy and 21 cloudy."

Situated as we are, in the very heart of the arid region, all our air must needs travel over hundreds of miles of sun-dried desert before it can reach us, from whatever direction it may come; and hence we combine here all the advantages of life on the desert with those of a high altitude. It will at once appear that we have here such a climate as we have been looking for, altitude combined with a singularly dry, pure and tonic air, and almost constant sunshine, "with a daily variation in temperature just sufficient" to produce a conservative reaction against further bacterial invasion.

Having found a suitable climate for our patient, we shall endeavour to give him (1) an absolutely out-of-doors life, with the comforts of home and no "roughing it"; (2) good food, well cooked and nicely served; (3) rest or carefully regulated exercise; (4) systematic bathing; (5) the constant care of a physician, with the least medication possible.

(1) Out-of-doors life. Herein lies the great advantage of life in the so-called arid region of the West. Whereas patients find it difficult to spend seven or eight hours daily out of doors in the East, in Arizona many¹ "can and do spend as many as twenty-two hours or even more, out of every twenty-four, in the open air with comfort and pleasure all the year round."

In the matter of quarters one has the choice of a tent-house with veranda, or a specially constructed cottage with veranda. In each case the veranda is the important part of the structure, and the house part being only a necessary evil, is made as small and unimportant as is consistent with the ordinary comforts enjoyed by the wealthier classes. As all the verandas are specially fitted in one corner for a bed, the house part is ordinarily used only as a dressing room, the occupant spending the remainder of his time, whether sleeping or awake, on the

¹ Ibid.

veranda or elsewhere, out of doors, day and night, summer and winter, every day in the year.

The tent-houses are all one roomed, the size of the rooms varying from 12 to 14 feet, to 16 by 18 feet. They are of heavy canvas, raised some considerable distance off the ground, and have railed verandas in front, the whole being covered by a large canvas fly, raised about a foot above the tent. The floors are of matched flooring, of good quality and well oiled. The walls are seven feet high, four feet being boarded and battened; the remaining three feet of the walls and the roof are covered only by canvas, thus admitting a maximum amount of light and allowing the action of the sun's rays to be felt in absolutely every part of the room. The front entrances are of double size, and have double screen doors with wire netting above and on each side of the doors, so that, by throwing back the canvas, the whole front of the tent is opened and covered only by the netting. In this way, by simply opening both screen doors, it is quite easy to roll the bed into the tent at any time the rain should beat in on the veranda, and still enable one to sleep in what is practically out of doors. All the tent-houses have either a window or a door in the back, thus allowing a free current of fresh air at all times. They are all fitted with stoves, lighted by electricity and nicely furnished.

For the use of guests who occupy tent-houses there is a bath-house containing two bath rooms, with specially large porcelain tubs, with hot and cold water, and two toilets nicely fitted up with the most modern plumbing.

Back of the tent-houses are a number of artificial bowers, a high frame-work open on all sides and covered with fresh pine boughs. These are always cool, and are ideal spots for an afternoon siesta.

As regards cottages, after some considerable experimenting, we have come to the conclusion that Trudeau's idea of a cottage that will accommodate four guests is the most practical one. Such a cottage should have two verandas, 12 feet wide, and running the full length of each side; four rooms about 12 by 12 feet; four large clothes closets; and two bath rooms with toilet and wash bowl. Each room should have a fire-place, and be fitted up as a dressing room, which could on very rare occasions be used as a sitting room. The verandas are for sitting-room and bed-room combined, and should be nicely arranged with beds, tables, chairs, rugs, house plants, etc. Out-of-doors life in a pine belt, and amid surroundings such as these, should be, and is, a pleasure to even the most fastidious.

(2) Good food well cooked and nicely served. This is the part of our treatment that it is so very difficult to get in the arid region of the West. This can, I think, be gotten in only one way, by having your resort under the direct management of a medical man who is willing to give the kitchen and dining room his personal supervision, even to the extent of giving each individual order a personal inspection before it leaves the kitchen. This, as you can well imagine, is very difficult to do; and yet we have proved abundantly that it is possible to do it, and that it is only in this way that satisfaction can be given.

The food should be good; prime roasts of beef, sirloin and tenderloin steaks cut thick, choice legs of lamb, French chops, spring chicken, good home-made bread, fresh fruits, fresh vegetables, cereals, an abundance of fresh milk and new-laid eggs, with enough soups, fish, salads and desserts to make the meal appetizing.

The food should be well cooked; the roast beef cooked in a double pan or roaster, or well basted during cooking; the steaks broiled; the potatoes baked; the bread well kneaded and carefully cooked.

The food should be nicely served; the table made attractive with a variety of good silverware and glassware, and well laundered linen. The orders should be dainty and served fresh and hot, and the table maid should be attentive.

We think three hearty meals a day is the basis of good feeding, and have found that quite a large percentage of these early cases do better without any food between meals. For those who cannot eat heartily at mealtime, and for the few who can and still take nourishment between meals, we provide new laid eggs, fresh cow's milk or expressed beef juice to be taken at 10 a.m., 3 p.m., and at bed time.

(3) Rest or carefully regulated exercise. Of these two forms of treatment, rest is by far the more important, especially in high altitudes. Most people make the mistake of beginning to exercise at once on coming up here, forgetting that there is probably as much work thrown on the heart and lungs while sitting still at this altitude as there is in taking quite active exercise at sea level. We think that all patients should avoid all exercise for the first few weeks, and quite a few for some months. For those who have a continued afternoon temperature, however slight, and for those with an afternoon temperature above 100°, if only for a few days, we advise absolute rest in bed. Absolute rest in bed has in suitable cases proved the very best therapeutic agent we have been able to find; the one that gives the quickest and most satisfactory results.

As regards exercise, it should not be begun until after there have been marked signs of improvement in any case, and then should be commenced very moderately and increased very gradually, the results being carefully noted each day by the physician in charge.

(4) Systematic bathing. We consider this a very important therapeutic measure, and one that is to a large extent neglected in this country. For the majority of cases the cold sponge has seemed the most beneficial. We follow the method recommended a few years ago by Dr. A. D. Blackader, of Montreal. An ordinary wash tub, filled about one-third full of pretty hot water, is placed every morning by each guest's wash bowl. He stands in this tub and sponges his whole body very freely for a few minutes with cold water from the wash bowl, the colder the better. He then rubs himself briskly with a Turkish towel. The warm water serves to prevent chilling, and adds greatly to the comfort of the bath; and we have found quite a large number who can take a cold sponge bath in this way, who had not been able to do so before. There are a few people who simply cannot take the cold sponge, and for these we advise the daily tepid sponge taken in the same way.

(5) The constant care of a physician with the least medication possible. Some one will say, "When there is to be little or no medication, what is the use of having a physician?" I reply, principally to keep the patients from taking medicine. Let the physician teach his patients that their stomachs were not meant for apothecary shops. Let him educate them up to the idea that the days of cod liver oil and creosote, of opiates and cough syrups are past indeed, not alone in theory but also in practice. We are practically all agreed that no drug has any beneficial effect in tuberculosis, and yet how many of us have the courage of our convictions? Are we not still drugging? We might with profit follow the advice of Hare in typhoid fever, and hang on the bed of every tubercular patient the following notice:—"Let the patient get well." Does your patient cough? Let him live out of doors. Has he fever? Let him rest in bed. Is he anæmic? Let him sit in the sun.

A recent number of the Los Angeles Medical Journal had the following:—"Treatment by light is becoming more and more popular. Red light for small-pox, blue light for erysipelas, and ultra violet rays for all the ills the flesh is heir to. But the clear bright light of God's own sun is the most powerful curative agent of them all."

Let the physician attend to the details of the treatment that I have indicated, and look after the upper air passages, and nature will do the rest.

We think that the treatment of patients of this class can be carried out better in an open resort such as ours than in a sanatorium. Here we have more liberty and less irksome restraint; more suasion and less compulsion. Certain general rules of life are laid down to which all must conform, notably that one in regard to the disposal of all sputum. On the other hand, each guest is at liberty to consult a physician professionally or not as he thinks best. As a matter of fact, they all soon learn that it is better to consult one, and are much better satisfied with his advice than if they were compelled to consult him.

In conclusion, these are no chimerical ideas, but they have been successfully put into practical use by us during the past two years, and we hope, by continuing as we have begun, to cheat the "great white plague" of at least a few of its intended victims.

SOME CLINICAL CONSIDERATIONS IN RESPECT OF INFLAMMATION OF THE UTERINE APPENDAGES.

BY

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Mr. President and Members of the Society:

With your permission I shall dispense with the conventional introductory apology, beyond making the statement that this paper contains nothing new. It is merely an attempt to gather together, and to collate into a single thesis the different, the diverse, the almost protean-like life histories which are presented to us clinically, by inflammatory disease of the uterine appendages. This paper has been written entirely in the spirit of our own local Renaissance—the Clinical Renaissance—if I may so term it, which even now is present in our midst; and, in consequence, it is chiefly concerned with details of diagnosis and of treatment.

By the uterine appendages or adnexa we mean, of course, the ovary and Fallopian tube, each on its own side of the uterus, and in inflammatory lesions of these organs it is the common rule to find not only that the two organs of one side suffer jointly, but also that the organs of the

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opposite side share in the involvement. In other words, the lesion of Salpingo-Ovaritis is very generally bi-lateral. Occasionally it is true, the inflammatory mischief may be confined to one side of the pelvis, and in exceptional cases even to the single organ, tube or ovary, of that side. But in the great majority of cases, inflammatory disease once determined in the pelvis is soon more or less widely disseminated therein, and that while the uterine appendages of one side may at first alone be implicated, sooner or later, depending upon the kind of infection, the appendages of the opposite side become involved.

And this clinical finding depends upon two groups of facts; (*a*) the anatomical group, and (*b*) the pathogenetic group.

In (*a*) the anatomical group we remember that, below, the Mullerian canal, namely the vagina and uterus, is single and centrally placed in the pelvis, while above its two component parts persist as separate tubes—the Fallopian tubes, which in their turn communicate directly, each on its own side, with the great lymph space, the peritoneal cavity. In this dichotomously-branched genital canal there obtains thus a direct continuation of serous and mucous surfaces from one side to the other of the pelvis and maintained therein from one side to the other is a continuous lymph current. The lower half of this genital canal, namely the vagina and uterus, the part most frequently infected, is placed axially in the pelvis and embracing it on its two sides is the richest vascular and lymphatic supply, outside the portal system. These blood-vessels and lymphatics freely anastomose even across the middle line, the veins are plexus-like in arrangement and possess no valves and directly in the path of the two main lateral lymphatic streams the ovary and outer half of the Fallopian tube are placed. So for two anatomical reasons,—the direct continuation of their surfaces both serous and mucous, and their extremely rich and anastomotic vascular and lymphatic distribution, the female pelvic viscera are rendered specially vulnerable throughout their whole extent, to the invasion and spread of organismal infection.

Considering now (*b*) the pathogenetic group of factors we recall that infections here occur chiefly in three or, at the most, four ways.

(1) The ascending infection where the organisms enter the vagina and uterus from below and therefrom spread either by direct contiguity to the uppermost limit of the genital tract on either side, or are carried thither from the centrally-placed utero-vaginal cylinder by the numerous efferent channels, vascular or lymphatic. Witness the spread in this manner of a septic or gonorrhœal infection and how almost inevitable must be their bi-lateral invasion of the tissues.

In (2) the descending infection the conditions are in some way reversed for the infection here takes place from the general peritoneal cavity. The organisms gravitate toward the bottom of this cavity—the pouch of Douglas—and thence are swept by the lymph stream into one or both of the Fallopian tubes. The best example of this descending infection is seen in tuberculous salpingo-ovaritis where the tubercle bacilli from some primary focus gain entrance to the peritoneal cavity, sink to its lower pole and thence enter and infect the Fallopian tubes. Here also, the lesion tends to be, or to become, bi-lateral.

(3) Infections from the blood-stream, pyæmic in character, very frequently, by reason of the valveless veins and the free venous anastomosis, manifest here multiple and bi-lateral foci.

(4) Even in the direct infections from the neighbouring pelvic viscera, the bowel or bladder, the mischief remains localized and unilateral, only if it is not progressive.

Speaking generally then inflammatory mischief affecting either primarily or secondarily the internal genitalia tends always to involve these organs throughout their whole extent and to implicate almost invariably the pelvic peritoneum and cellular tissue.

The ætiology of these lesions, as we have already intimated, is organismal. Pelvic congestion, strain and wet feet are at the very most but predisposing factors, for the actual causes here as elsewhere, are the various pathogenic organisms.

These organisms are the following and named in the order of their importance:

(1) The *Gonococcus* of Neisser as causative of Gonorrhœa, either obvious or latent.

(2) The *Streptococcus* and *Staphylococcus pyogenes* and *Bacillus coli communis* as evidenced in all septic cases, puerperal or traumatic, with their marked predisposition to acute systemic infection.

(3) The *Bacillus* of Koch as productive of genital tuberculosis.

(4) And very rarely the Ray Fungus of the *Actinomyces* Bovis.

These are the organisms and frequently do we get of these mixed infections. Their bacteriology has only recently been thoroughly investigated and notably by Bumm, Wertheim and Foulerton. In the light of this work our clinical experience in these cases is explained and confirmed, for we are told that while the *gonococcus* thrives best upon mucous and serous surfaces it may penetrate deeply into underlying cellular tissue and remain therein for long periods, months or even years, quiescent but potentially virulent; and that while pyogenic bacteria prefer the lymph spaces of cellular tissue, they nevertheless may

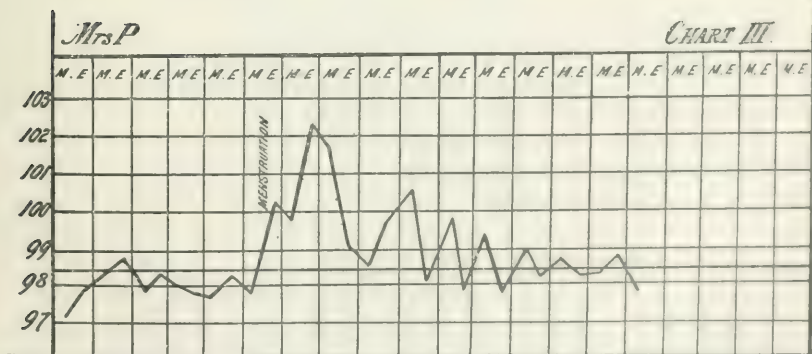
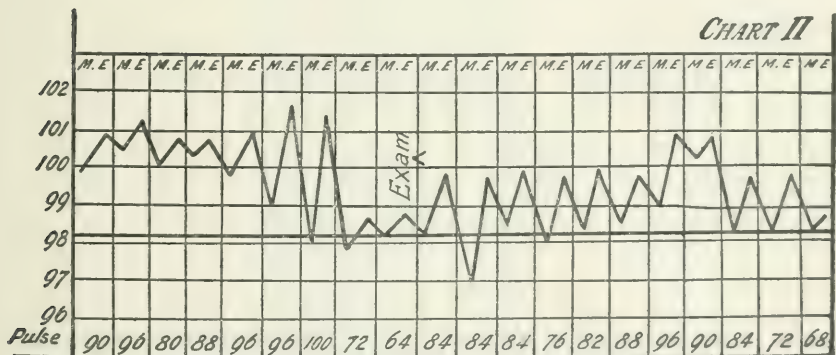
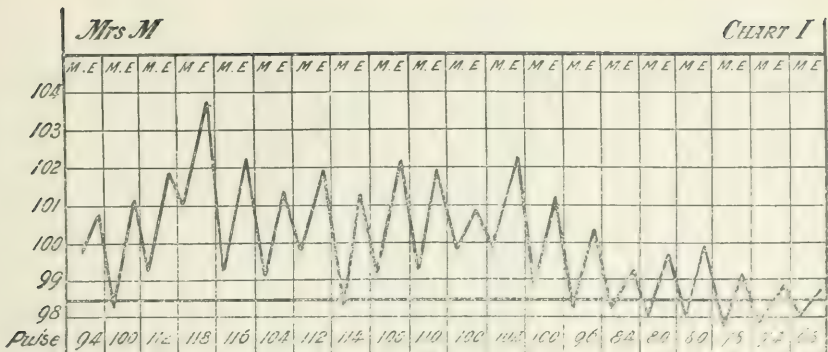
flourish with extreme virulence upon any mucosal surface. To the former category and with similar predilections belongs the tubercle bacillus while the Ray Fungus is to be included in the latter. In concrete terms of the inner genitalia, gonorrhœa and tuberculosis affect primarily the mucosa and submucosa of the uterus, Fallopian tube and ovary, while the pyogenic organisms seek always the cellular tissue of the pelvis, the parametrium. And such is invariably the clinical experience.

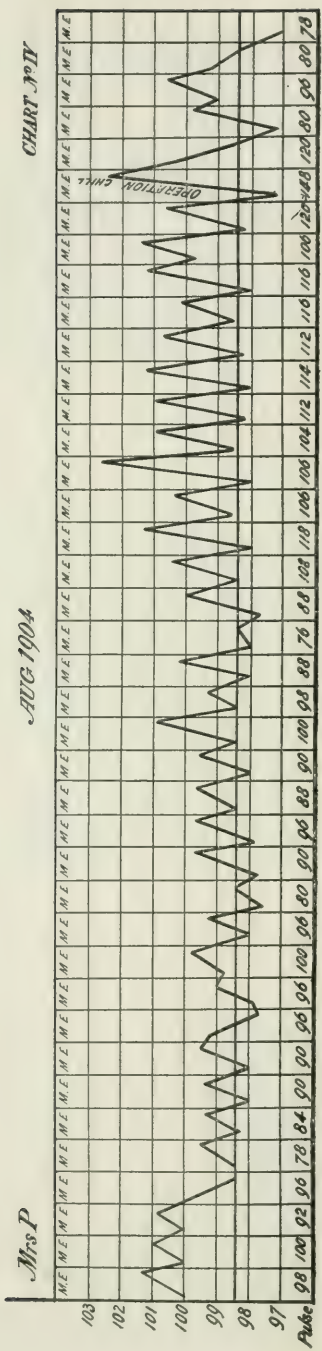
Of the organisms by far the most frequently found and the most baneful in results is the gonococcus. Even in our own younger country 75 to 80 per cent. of the cases of salpingo-ovaritis in hospital practice are due to this organism. It is of this organism, of gonorrhœal inflammation of the Fallopian tubes and ovaries,—some few points in its diagnosis, prognosis and treatment, that I wish to speak.

Clinically, as we meet them in hospital or private practice, these cases of gonorrhœal salpingo-ovaritis fall into two groups according as the process, for the time, be virulent and acute, or latent and chronic. These phases are recurrently met with in one and the same individual, for while the disease is essentially a chronic process, slowly progressive for months or even years till the organisms are by their own toxins exterminated, yet ever and again this course is marked by the occurrence of exacerbations when for days or weeks the clinical picture is one of an acute infection. These exacerbations are due to the sudden invasion of healthy tissue or surfaces by the organisms and their products, are frequently traumatic in origin and almost invariably take the form of a pelvic peritonitis, greater or less in extent. The old simile of likening this infection to the slow spread of a fire through dampened brushwood, is extremely apposite and I may be pardoned for repeating it. How the fire smoulders and smoulders with but faint signs (or symptoms) till suddenly here or there, reaching more favourable conditions, it is driven into flame, but only more or less quickly to burn itself out and be lost again in the general smouldering. And so its progress continues, now hidden, now alight, till finally its whole course is checked, and gradually it smoulders and smoulders out.

First then the clinical picture of Group 1, Cases of Acute Gonorrhœal Salpingo-ovaritis; and taking a typical instance.

The patient is extremely ill and abdominal symptoms predominate. There is fever 101°-103° F., usually remittent, increased pulse rate, 100-120, abdominal pain, rigidity and tenderness, most marked over the lower quadrants. The decubitus is supine with knees drawn up, the expression is anxious, the tongue furred; there is some abdominal distension, complete anorexia and not infrequently nausea and vomiting.





Not infrequently the signs are more marked on the right side in which event the case so far may be in no way distinguishable from an acute appendicitis. Yet if possible this distinction must be made for the treatment of the two conditions, adopting the latest teaching in appendicitis, is diametrically opposed. The history in these cases helps you little for it is often meagre, inexact and unreliable.

The diagnosis is often one of great difficulty and it can only be made by means of a careful and expert pelvic examination. The findings in such an examination are as follows, and please remember that I am dealing with a typical case.

The vulva and vagina show no acute inflammation save there has been a recent second infection, but the urethral mucosa is red and pouting and a muco-purulent discharge can be expressed therefrom. Skene's tubules are prominent and inflamed, while the openings of the Bartholinian ducts are the centre of small reddened areas, the *gonorrhica macula* of the Germans. The vagina is hot, the fornices depressed and the edges of the os, catarrhal. The bi-manual reveals the uterus slightly enlarged, immobile and sensitive—movement of it in any direction causes pain. The appendages on either side are represented by two trumpet-shaped masses, the ovary and tube, swollen, enlarged and matted together, extending outwards from the uterus. These masses are of indefinite outline, varying size, position and consistence and are extremely sensitive.

Such then is the finding in a typical case and upon such data the diagnosis rests. The all-important points are these. The inflamed urethra, Bartholinian ducts, Skene's tubules and cervical canal indicating that an acute gonorrhœal inflammation has passed that way, while the bi-lateral involvement of the uterine appendages in an acute inflammatory process, sufficiently corroborates the matter. The case is one of gonorrhœal salpingo-ovaritis, an acute exacerbation with pelvic peritonitis. Where the palpable involvement of the uterine appendages is slight, unilateral, and on the right side the case is not so clear for the differential diagnosis between this condition and appendicitis is then very difficult and sometimes impossible, for the two conditions may co-exist. In such cases the presence or absence of the signs of gonorrhœal inflammation lower down in the genital tract must decide the matter.

The difficulty in diagnosis lies always in these acute cases and to illustrate this difficulty I show you the accompanying charts. These charts have been prepared for me by Dr. Goodall from cases in our hospital practice. Charts I and II are those of cases sent to hospital

for immediate operation, as acute appendicitis. These were difficult cases for, as you observe, the patients were acutely ill, a temperature of 100° - 102° or even 104° F., and a pulse rate of 94-118, with all the signs of an acute peritoneal infection. But, however, the evidences of a gonorrhoeal invasion such as I have indicated were manifest both above and below in the genital tract and upon these evidences the diagnosis of acute gonorrhoeal salpingo-ovaritis was based. Operation was deferred, the patients put to bed with an ice-bag, and the subsequent history indicated on the charts, amply justified the decision.

Here, as elsewhere, I had almost said, more than elsewhere, the diagnosis is all-important, for the indication in these cases is not operation which at this time is always futile and frequently disastrous, but delay and a watchful passivity.

The prognosis in such cases is very generally good as regards life, for very seldom indeed does a general peritonitis or septicæmia develop. The process, acute as it may be, is usually a self-limiting one and terminates either in abscess formation or in more or less incomplete resolution. This abscess formation, be it tubal, tubo-ovarian or peritoneal, with ordinary care will not rupture and it can be dealt with, after the more acute conditions have subsided in comparative safety.

Treatment:—The great factor here is *rest, immobility*. The patient is to be kept continuously quiet in bed with light local applications of cold or heat over the lower abdomen, the bowels emptied by small enemata or mild aperients, preferably castor oil, and nourishing liquids generously given. And this is all. Morphia is seldom required, but if necessary it may be exhibited. Beyond the applications to the abdomen, no local treatment whatever is employed. The great object is to secure immobility to the parts, so to expedite and promote the limitation of the process.

Even if resolution occur slight relapses are the rule as some undue movement or slight trauma drives the infection further afield. Chart II. shows such a relapse following a bi-manual examination made by myself. I was careful to use no undue force, to exert little pressure and yet the slight movement was sufficient to institute a fresh infection. Chart III shows very well a common occurrence in these cases, namely:—a relapse produced by the trauma of the menstrual period. The temperature rose to 102° F.

The one thing to watch for in all these cases is abscess formation. Though the testimony of the chart can generally be trusted, yet a careful bi-manual examination must from time to time be made to determine the exact conditions in the pelvis. If abscess form, the pus must

be evacuated and, in such event, choice must be taken of the abdominal or vaginal route. The latter, the vaginal route, is always the route of election, for the abscess is then opened extra-peritoneally or under the roof of extensive adhesions, and from below, and drainage can be maintained simply by a T-shaped rubber tube.

In rarer cases, where the abscess remains intrinsic to tube or ovary, separately or conjoined, where their outline remains distinct and their high and discrete position in the pelvis is maintained, the abdominal route is chosen. The pyosalpinx, ovarian or tubo-ovarian abscess is removed *en toto*, either unruptured or after aspiration, and if necessary vaginal drainage is established, with complete closure of the abdominal incision.

A few cases run for weeks a more or less acute course with symptoms of pus formation and yet with no abscess discoverable by examination. Here a leucocyte count is of value, any enumeration above 12,000 being strongly affirmative.

Chart IV. illustrates such a case which ran for four weeks the course therein indicated. The leucocyte count was ambiguous, ranging from 9,000 to 13,000. Finally, I performed an exploratory posterior colpotomy tunnelling with my finger the large, firm, nondescript inflammatory mass in the pouch of Douglas and eventually entered and evacuated two small pockets of pus. The convalescence was thereby established and for three years her good health, considering the enormous deposit which persists in her pelvis, has been a matter for wonder and congratulation.

In all these acute cases whether the immediate issue be abscess formation or incomplete resolution, the later result, is always a residuum of chronic exudate and deposit greater or less in extent.

We come then to the clinical picture of Group II., cases of Chronic Gonorrhœal Salpingo-ovaritis.

The difficulty here is not one of diagnosis but of *treatment*. You all know the typical case. The woman is sterile, suffering and anæmic. Pelvic pain is more or less constant, her menstrual habit is depraved and her dysmenorrhœa a recurrent torture. The general health is impaired by the specific toxæmia, the origin of her neuralgia and rheumatic misery, and her life is one long martyrdom of suffering and disability. Truly in many cases were it better that the millstone be hanged about the neck.

The diagnosis is easily made. Though evidences of gonorrhœa may be failing in the lower genital tract, the uterus is found enlarged, sensitive, fixed, and very often displaced, while its appendages are transformed into ill-defined masses of various size, shape and consistence,

everywhere adherent and bound down, and frequently more or less completely filling the pouch of Douglas.

The lesion can only be confounded with tuberculous salpingo-ovaritis and that rarely. For in the tuberculous cases the history, the healthy condition of urethra and vulvo-vaginal glands, the evening fever, the presence of other tuberculous foci in, for example, the lungs or peritoneum, the occasional detection of pea-like nodosities at the uterine end of the Fallopian tube, as pointed out by Chrobak, and the possible discovery of tubercle bacilli in the discharges from the uterus, can seldom fail to establish a differential diagnosis.

The prognosis in these cases in respect of complete recovery is always bad, for even after all active mischief has ceased the results remain—the crippling results of disintegration and adhesions. The earlier in life the disease is acquired the more extensive and destructive is its spread. The infection only slowly burns itself out, more especially after the menopause has relieved the pelvis of the periodic trauma of menstruation, so that while there is little danger to life, in the worst cases, the consideration is often of the suspended millstone.

The Treatment: The first and great considerations here must always be palliative, though at the best this is a slow, tedious and exacting business. Concerning this palliative treatment I am personally a great believer in prosecuting a definite, rigorous routine, but for short periods and only at intervals. For example, a three weeks' course of treatment at, according to conditions, a three or six months' interval. In this way I believe you secure more actual results and the patient escapes the discouraging weariness of protracted medication.

During these three weeks the patient is confined to her room and very largely to bed with a specially trained nurse in attendance, and the following daily routine is established. In the morning she gets a large, hot vaginal douche, given slowly and in bed, with the hips elevated upon a douche-bath above the level of the shoulders. Two quarts of water, plain or medicated, are used at a temperature of 110-120° F., and eight or ten minutes are consumed in the process. A large, single-channeled vaginal nozzle is used, and at few second intervals the nurse by gathering the labia about its shank, checks momentarily the back-flow from the vagina. The object of the douche is for the time to apply a hot liquid poultice to the whole vaginal roof,—to the surface nearest the inflamed areas. Afterwards the vaginal fornices are lightly packed with several small lamb's wool tampons, saturated with the useful vehicle of hygroscopic glycerine and any counter-irritant, as iodine or ichthyol, that may be chosen. A large dry tampon is placed in the vagina

below and these are left in situ throughout the day. At night they are removed and a second vaginal douche is given, and throughout the night the vagina is left empty. Persistent localized pain is relieved by blistering the ovarian areas of the skin, either in front or behind. General nutrition is improved by deep massage of the thorax and extremities, but not, at least at first, of the abdomen,—an hour's treatment every second day; by a generous diet and the exhibition of iron and arsenic, with or without iodide of potash and one or other of the mineral waters. This treatment is continued for three weeks. At the onset of the menstrual period it is stopped, and thereafter the patient gradually resumes her customary mode of life, ordinary hygienic instructions and complete rest in bed during her menstrual periods being the only restrictions placed upon her.

It is good practice to advise change of air, short sojourns at any health resort and especially an occasional course at one of the Spas, either in our own country or in Europe. Failing this, Russian or Turkish baths at home are useful. The whole object of this treatment is to promote resolution and absorption in the pelvis and in many instances the good results arising therefrom are astonishing. Electricity in these cases is disappointing and when applied within the uterus is not altogether safe. Excellent results are claimed by the Germans in the use of hot air in the apparatus used at Griefswald by Klapp. This apparatus consists merely of a box, reaching from the ribs to the knees, in which the patient sits for from 15-30 minutes at a dry temperature of 120° — 130° C.

Such then is the palliative treatment of these cases, and it is only when all these means have failed, and only as a last resource that operative measures are to be considered. These measures, however, when undertaken should be radical, carried out so as to extirpate the whole disease. Mere curetting of the uterus is seldom or never indicated, and is often dangerous, while partial ablation of the appendage mischief, the removal only of the organs most affected, is in general terms bad practice. Conservative surgery has small place here, for the very operation itself may prove the requisite trauma to set alight the disease in the organs that remain, and the last condition of that woman be worse than the first. But granted the absolute necessity of surgical intervention, cases not a few, where by pelvic suffering, existence is disabled and intolerable, then let the operation be thorough and complete. Take away the inner genitalia above the vaginal vault and as much as can be of the germ-infected parametrium, extirpate the local disease. And in

these cases the results are for the most part extremely satisfactory, the wisdom of the procedure is justified.

WILLIAM GARDNER, M.D. The subject so ably treated by the essayist is of the greatest importance, not only to the physician and surgeon, but to the general practitioner, when we bear in mind the vastly greater prevalence of gonorrhœa than is generally believed. Dr. Chipman very properly emphasizes the assistance to diagnosis of this disease in the appendages from evidence of its existence in the lower genital tract. Such evidences are found chiefly in those parts of the tract lined with columnar epithelium; the urethra with its Skene's tubules and the uterine cervical canal. Here we constantly find it when the vagina may be entirely free. To avail of such evidence it is important that the parts be inspected before the patient is allowed to pass water, as otherwise the flow of urine may remove temporarily the discharge. The value of such suggestive or presumptive evidence in the diagnosis of appendicitis from gonorrheal inflammation of the uterine appendages cannot be overestimated. Their co-existence must, however, of course be borne in mind.

As regards the bimanual examination a word of caution seems to be in place—great gentleness to avoid the rupture of adhesions limiting an actively infective collection. The same thing is true of another condition, ectopic gestation, which may be confounded with the conditions under consideration. It is obviously far better to remain undecided as regards the nature of the case than to put the patient in danger by the method of examination.

With regard to tuberculous disease of the uterine appendages, now known, as Dr. Chipman has remarked, to be much more frequent than formerly supposed to be the case, it is to be strongly suspected in young women in whom by history and careful examination evidences of gonorrheal and puerperal infections may be excluded, especially if the case has run a very chronic course. In a number of such in my experience when first seen there was no elevation of temperature, a moderate amount of pain, failure of general health, and if the endometrium was not involved, arrest of menstruation. Diagnosis in many cases will, however, only be made at the operation and by microscopic examination. A similar diagnosis of tuberculosis of the bladder in young women suffering from chronic cystitis may be presumed when all evidence of gonorrhœa or puerperal infections can be excluded.

I wish to add a word in favour of conservative surgery in dealing with the diseases of the uterine appendages, especially in gonorrheal cases. I am quite sure I have seen patients recover completely after removal

of the tube and ovary of one side, and I firmly believe in the possibility of complete recovery without operation, of mild gonorrhœal infections of the appendages even to the extent of restoration of the highest function of the sexual organs, conception and parturition. This may be an extremely important matter to any married woman and therefore I think that unless the disease is extensive, in operating it is a duty to retain some part of the organs concerned. Recovery from a mild attack of gonorrhœa in the tube may be favoured by syringing with a germicide solution. If surgical technique had not reached its present stage of comparative perfection, radical measures would be more justifiable. Now, however, we may the less hesitate to be conservative even at the risk of necessity for a second operation.

EXTENSIVE SYPHILITIC NECROSIS OF FRONTAL BONE— REMOVAL OF BONE—PLASTIC REPAIR.

BY

CLARENCE GRAY, M.D.,

AND

EDWARD ARCHIBALD, M.D.,

Assistant Surgeon Royal Victoria Hospital.

In these latter days of more accurate diagnosis and more thorough treatment it is comparatively rare to come across such a serious syphilitic lesion as that indicated in the title of this report. This, together with the fact that the large defect was successfully covered by means of a plastic flap, may serve as sufficient justification for the publication of the case. Dr. Gray reports the history up to the time of the patient's being sent to the hospital, and Dr. Archibald's report of the surgical procedure follows.

Mrs. M. H., aged 32 years, occupation, that of housewife, was seen for the first time in October, 1904, when she complained of an "ulceration and discharge from the forehead."

The history of the illness dated from a fall down a flight of stairs in June, 1903. In falling she struck her forehead rather violently, yet there was no abrasion of the skin, and in a short time she thought no more of the accident. Some months after this, the onset being so insidious that she does not remember the exact date, she began to suffer from severe frontal headache, which was largely nocturnal and prevented sleep. The headaches continued until in June, 1904, *i.e.*, about one year after her fall down the steps, she first noticed the appearance

of a swelling on the forehead. This swelling soon attained the size of half a hen's egg; it was rather circular in outline, painless, and only became reddened after she had poulticed it. It broke after a few days poulticing, and discharged abundant pus, leaving exposed bone at the base of the ulcer. After that time up to October, 1904, the ulceration gradually spread and exposed a larger area of bone.

As stated above, she did not apply for advice until October, 1904, though suffering from so much inconvenience and disfigurement.



Personal History:—She had typhoid fever when 17 years of age; otherwise had always been healthy and was so until about one year after her marriage in 1896. The first trouble she noticed was a "sore throat" which caused a loss of voice extending over several months. She cannot remember having had a rash on the body or face. She has had in all three children and one miscarriage. The children, she states, seemed all right when born, but they soon developed the "snuffles," and did not gain in weight to any extent. The first died when only eight months old., The second only reached five months; it had chronic diarrhœa as well. The third child died at three months. None

of the children exhibited any rash on the body, but they were pale, wizened infants without vitality.

The miscarriage interrupted her last pregnancy and occurred during the second month, and without any exciting cause apparent to her.

In 1900 she had an operation at another hospital for the removal of a portion of bone from the hard palate. She now has a permanent fistula in the roof of the mouth connecting with the left nasal cavity.

Patient's habits have always been good in regard to alcoholics, and during the last three years she has been a total abstainer.

The Family History:—Contains not much of interest, except that her mother and two maternal aunts died of pulmonary tuberculosis. One sister died, aged three years, cause unknown. Her father is still alive, aged over 60.

Present Condition:—Patient is a woman of apparently the age stated, well built and fairly muscular, subcutaneous fat in fair amount. Mucous membranes rather pale. Teeth normal in shape and in good condition. She has a rather husky voice owing to the fistula in the hard palate.

Integumentary and Osseous System:—In the median line of the forehead is a round area of uncovered bone, about $2\frac{1}{2}$ inches in diameter, and of a dull, somewhat yellowish appearance—plainly dead bone. It is entirely denuded of periosteum, and in spots appears eburnated. Other areas seen less dense and show minute perforations. The margin of the skin is raised, reddened, and undermined; and discharges an abundant thin pus.

The husband denied having had venereal disease. Nevertheless, a diagnosis of syphilitic necrosis of the frontal bone was made upon the following points: (1) the history of previous bone necrosis in the hard palate; (2) the story she told of her children and her miscarriage; (3) the peculiar punched-out look of the ulceration, so characteristic of syphilitic lesions; (4) the extent and the situation of the bone necrosis. The syphilis was no doubt an acquired one, for she presented no evidence of depressed nasal bones, Hutchinson's teeth, etc.; and had always enjoyed good health until about one year after marriage. The fact that she never remembers having had a rash is no strong evidence against the diagnosis of acquired syphilis, as a rash is so easily overlooked.

She was sent to the Surgical Outdoor of the Royal Victoria Hospital, where she came under Dr. Archibald's care.

The patient was treated in the Outdoor Department through a period of three months with increasing doses of Pot. Iodid. without evident result. Finally she consented to operation, which was performed Janu-

ary 27, 1905. Upon reflecting the scalp by a crucial incision, a line of demarcation, irregularly round in outline and exuding pus was discovered, running about half an inch behind the edge of the ulcer, and more or less parallel with it. The natural separation of the sequestrum, however, as it usual with luetic necrosis, was very imperfect in places and the removal correspondingly difficult. All the dead bone being removed, the dura lay bare over an extent of close upon 3 inches transversely and $2\frac{1}{2}$ vertically. It was considerably thickened and covered with dirty granulations—a syphilitic pachymeningitis. The bone edge of the defect was moderately thickened; but the appearance of the two tables differed materially, the outer being greatly eburnated, while the inner, though somewhat dense, more nearly approached the normal. Of diploe as such nothing could be seen.

The wound gradually became covered, with healthy granulations; but the bone edge soon showed small areas of necrosis. On March 30, therefore, the flaps were again pushed back with the raspatory, and the lining edge of dead bone chiselled away. This was found to belong to the eburnated outer table alone, the inner table retaining its vitality, and it became evident that our mistake had been in shoving back periosteum too far in removal of the bone edge, thus cutting off a great part of its already precarious blood supply, and inducing further necrosis. And, indeed, one might have remembered that, although the eburnation was a luetic manifestation, it was so only as a secondary reactionary process, the response, in bone sclerosis, of the organism to the syphilitic irritation. Being such, it was living; and being outside the zone of total bone necrosis, there was no need to go on chiselling it off till one came to healthy bleeding bone.

Subsequently, a few more minute particles of dead bone were removed in the Outdoor Department, and on April 20th, the wound showing healthy granulations, it was decided to proceed with the repair of the defect by means of a flap raised from the anterior surface of the left forearm. The defect to cover measured $3\frac{1}{2}$ inches transversely by $2\frac{1}{2}$ vertically. The flap included skin and subcutaneous tissues with a small amount of the subcutaneous fat; the pedicle lay at the bend of the elbow. With the forearm obliquely across the forehead, a half-turn was sufficient to bring the flap into position, when it was secured with silk-worm gut sutures without tension. Long strips of adhesive fastened the arm to the head and shoulders; and this position was maintained for ten days, the discomfort being largely relieved by considerable doses of morphia.

On April 30th, under stovaine local anæsthesia, the pedicle was cut. Unfortunately, asepsis had not been successfully maintained, so that the edges had failed to unite save over a small area. Nevertheless, good union of the under surface of the dura had taken place, and this sufficed to maintain the vitality of the flap; while the skin edges united in due time by granulations. The resulting scar was larger than it would otherwise have been, and shows up in the photograph more unfavourably than in the fact. It is, however, successfully concealed, except the lowermost corner between the eyes, by a "front" of false hair.



The wound in the forearm was closed as much as possible at the time of operation. Later it was skin-grafted. Scar contraction, as a late result, now prevents full extension of the forearm, but causes very little inconvenience.

The brain pulsation is very plainly seen in this bone defect; and we hope that the case may form the subject of a few blood-pressure observations. It may be remarked, incidentally, that the pulsations are very markedly increased in force and rate if the patient gets "in a passion"; indeed, she tells us, naively enough, that these have already served, as

did in Dickens's day, the hysterical heel-tappings of Mrs. Pott, to intimidate an aggravating husband and bring him to reason.

In the presence of this very extensive destruction both of bone and soft parts, it becomes a point of some interest to determine the primary situation of the gumma. There are two or three reasons which make one believe that this must have lain in the diploë. The severe nocturnal headache coming on months before the appearance of the skin lesion; the involvement of the whole thickness of the bone, and also of the external surface of the dura, with the total absence, on the other hand, of any symptoms of cerebral lesion; all this would point to a diploetic origin, rather than a periosteal or dural one.

Another interesting point in this case concerns the prognosis as to the repair of the bone defect. A fair number of instances have been reported, in which enormous defects in the skull have been gradually obliterated by bone regeneration. In a 17 year old girl, Hofmeister (quoted by V. Bergmann) saw a defect of 150 square centimetres, occasioned by the removal of a sequestrum, become reduced in the course of 10 years to one of 4 sq. cm. In the present case, a recent examination shows already, after a lapse of 5½ months from operation, a very considerable filling up of the gap with new bone. This is proceeding mainly from the upper edge in its whole length, and has covered in about one-third of the defect, the area of brain pulsation now measuring 1¼ in. vertically by 1 in. transversely. No doubt both inner table and dura are actively forming new bone. The raised sharp edge of the eburnated outer table remains exactly as it was left at operation, and probably takes not the least share in regeneration.

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No. 1.

SIR JOHN BURDON-SANDERSON.

To those upon this side of the water who never set eyes upon the man, the abundant tributes to Burdon-Sanderson in the English medical journals of this month will have occasioned some surprise. Save his classical article upon Inflammation, contributed to Holmes System of Surgery, now more than a generation ago, there is little in medical science with which the practitioner of to-day is likely to associate his name, unless he recalls that he was successively Professor of physiology at University College, London, in its palmyest period, and then at Oxford, becoming later Regius Professor of Medicine in the same old university, a post in which he was followed by Dr. Osler. And yet, despite the paucity of apparent results of his life work Burdon-Sanderson was a great man: he was one of the English masters of medicine of his epoch.

One had but to find oneself in his company for a moment to realize this. For he was unforgettable. A gaunt frame, tall above the ordinary, was surmounted by the handsomest-ugliest head in all Britain: broad of brow, prominent of cheek-bones, strong but sharply chiselled in jaw, and over all nature had been at her stingiest in stretching the skin so that Caledonia and Albion might have been his nurse—indeed, he came from the Northumbrian border. Added to all this, the deep-set eyes appeared to be travelling habitually across vast unsounded seas of thought, and gave to the whole rugged face an expression at once scholarly and noble.

Sir John in short, to quote Professor Sherrington, was an “intellectual,” and herein lay his singular strength as also some of his weakness. With great endowments, occupying the position that he did at one of the most remarkable periods of physiological and medical advance one is forced to compare him with his peers in other countries, and the comparison is to his temporary disadvantage. In his manifold interests he reminds us of Virchow. Thus, during his long career, he had been lecturer on botany, medical jurisprudence and physiology, hospital-physician, medical officer of health, and adviser of the Government upon health matters, superintendent of an institute for comparative pathology, professor of physiology in two universities, and, finally, Professor of Medicine, and Dean of his School. But his output compares neither in amount nor in importance with that of the great Berlin *savant*. Prior to Pasteur and to Koch he was studying infection, and with a sure prescience recognized the part played by microbic agencies; nevertheless he cannot be counted among the founders of bacteriology. A pupil of Wurtz, he started the first laboratory of physiological chemistry in Great Britain, but we can recall not a single advance along these lines in which he was directly concerned, although we freely admit that he recognized the importance of the subject that now occupies so leading a position years in advance of most other workers.

These facts notwithstanding, he was a great man, great in his influence upon others, loving his science for its own sake, possessing and exhibiting the loftiest ideals in his work, a seeker after truth. His pre-eminently was the search after exact facts: for these he had a love bordering upon worship. His weakness lay, we think, in regarding facts as equally valuable provided they were equally exact and precisely determined. As it was, he chose muscular activity as his main subject of study, and this because muscle lends itself so admirably to precise measurement and record of electrical and other changes occurring within it. But it must be confessed that the results obtained by him have

had relatively little influence upon the physiological and medical advance, or, more exactly, have not been along the direct line of that advance. Do not let it be thought that we would in any way depreciate research conducted purely for science sake. We would but give as our opinion that, granted that there are two or more problems presenting themselves for solution, each affording equal opportunities for the employment of exact methods, that man is wise in his day and generation and is more likely to be of service to his kind, who selects the one which has the greater promise of yielding results capable of direct application. Thus, for example, Sir John was satisfied to conclude that infection was due to microbic agency. Logically he had proved the case, and there his interest seems largely to have ceased. He did not seem to see the great gain there would have been in devoting himself to continued investigations along these lines. Again, the phenomena of muscular, rather than of cerebral, activity became his choice. But, as we say, this notwithstanding, he was a great man, and his particular greatness lay in his transparent love for truth, in the influence he brought to bear at the right period not merely upon his pupils, among whom may be counted Sir Victor Horsley and Professors Halliburton and Gotch, but upon all with whom he came in contact, and the ardour that he instilled into them for exact and honest research. He was no dexterous manipulator of instruments—it was only when he was over 30 that he began active laboratory work—the wonder is that, beginning so late he accomplished so much. His reading and knowledge impressed us as being singularly wide rather than deep. But he could, by his own personality, inspire others; and throughout his life the loftiness of his mind and the singleness of his aims had a healthy influence upon biological science in Great Britain.

THE MEDICAL SOCIETY.

A new departure was instituted when, on December 8th, the members of the Montreal Medico-Chirurgical Society responded to the invitation of the Medical Board of the Royal Victoria Hospital and attended a clinical meeting, which was held in the vacant ward in the east wing. Over a hundred were present, and the hosts issued a neat programme of the meeting. In one part of the ward, specimens of various kinds were displayed, with labels to explain them: these were specimens of morbid anatomy, microscopic sections, X-ray photographs and other things of interest.

After a preliminary examination of specimens, the chair was taken by Dr. Roddick, and the vice-chair was occupied by Dr. England. Dr. Martin showed a large spleen, freely moveable, dislocated from its site, the increase in size being due to malaria.

DR. GARROW showed a case of excision of the temporo-maxillary joint, and a wrist injury which resembled in appearance a Colles' fracture, but in reality was a backward dislocation of certain of the carpal bones. Dr. Byers showed a case of a long-continued recurrence of sarcoma of the choroid, where evisceration of the orbit had been done seven years after primary occurrence of the tumour; he also showed a metastatic gonorrhoeal conjunctivitis. Dr. Jamieson showed the results of two cases of submucous resection of the nasal septum (which procedure was described in the Retrospect of Laryngology of this JOURNAL for November), and further showed a case of syphilitic perforation of the soft palate in a girl of 15, in whom the disease is congenital.

Ten minutes was allowed for the examination and demonstration of the living cases, after which Dr. Bell reported his last two cases of actinomycesis, of which Dr. Keenan demonstrated the specimens. Dr. Archibald followed with the notes of a case of pancreatitis, in which the specimens displayed showed a very diffuse fat necrosis, and Dr. Gardner presented several remarkable gynecological specimens—colloid ovarian cysts, a bilateral tuberculous salpingitis, and a fibroid with pregnancy, while Dr. Evans exhibited skiagraphs of a rachitic case which suffered Cesarean section. Dr. Hamilton presented two cases of malignant disease of the lung, and Dr. Adami presented the pathological specimen. Dr. Birkett presented a case of ankylosis of the arytenoid articulations, which had occurred in a progressive stenosis of the larynx. Dr. Klotz presented specimens showing the disease which may be described as "clinical arterial sclerosis," which is the disease manifested in the radial arteries, which differs from the "pathologists' arterio-sclerosis" so often found in the aorta. Dr. Goodall showed a large hydrosalpinx. Dr. England moved, and Dr. Shepherd seconded, a vote of thanks to the Medical Board of the Hospital, to which Dr. Bell replied, pointing out that a meeting of this sort allowed the showing of cases that could not be brought to the rooms of the Society. He expressed the hope that this would be the forerunner of other meetings of this kind.

INTERNATIONAL MEDICAL CONGRESS.

The Fifteenth International Medical Congress will assemble at Lisbon, Portugal, during the week from the 19th to the 26th of April, 1906.

The official language of the Congress will be French, but in the general sessions, as well as in the meeting of sections, in addition to French, English and German will be made use of. There will be in all seventeen sections. The President is Conz Costa Alemao, and the Secretary General is Professor Miguel Bombarda, of Lisbon, to whom all general communications regarding the reading of papers may be addressed.

Most of the countries will be fully represented at the Congress through the National Committees. For the United States, Dr. John H. Musser, of Philadelphia, is President, and Dr. Raymond Guiteras is Secretary. The executive committee of the Canadian Medical Association has appointed Dr. A. McPhedran as President, and Dr. W. H. B. Aikins as Secretary for Canada, to act in conjunction with the International Committees of the Congress.

It is desirable that Canadians who propose to attend this Congress should put themselves in communication, as soon as possible, with either of the above named. This is the first International Congress at which Canada will have representation.

What personal qualities are essential, under modern conditions, for eminent service in medicine? This question will be answered by Dr. Osler in the *Atlantic Monthly* during the present year.

It is announced that the *Medical News* and the *Philadelphia & New York Medical Journal* is consolidated under the management of the A. R. Elliott Publishing Company.

In the review of Rockwell's "Dissecting Manual," which appeared in the December number of the JOURNAL, an error occurred. It was stated that it was a synopsis of Cunningham's Anatomy, "and the first edition at that." It is, in fact, based upon the second edition which was issued at the same time by the same publishers, Messrs. Wm. Wood & Company. At first sight it did not appear to the reviewer that one book could be a synopsis of another which appeared in the same month. The publishers have taken the pains to inform us that it was prepared from advance sheets.

ROYAL VICTORIA HOSPITAL.

Monthly report for November: Patients admitted during month, 258; patients discharged during month, 238; patients died during month, 21; medical, 88; surgical, 96; ophthalmological, 14; gynaecological, 41; laryngological, 19. Out-Door: Surgical, 701; medical, 484; eye and ear, 297; diseases of women, 110; nose and throat, 398. Total, 1,990. Ambulance calls, 81.

Reviews and Notices of Books.

ANATOMY AND PHYSIOLOGY FOR NURSES. By LEROY LEWIS, M.D., Surgeon to Lewis Hospital, Bay City, Michigan. 312 pages, with 100 illustrations. W. B. Saunders & Company, 1905; J. A. Carveth & Co., Toronto. Cloth, \$1.75 net.

The author's trust, as expressed in his preface, has been verified: the present reader has found not only "something," but much "to commend." As a rule, the smaller a book is, the more inaccurate it is. The present volume is neither inaccurate nor small. So long as nurses think they must know anatomy and physiology, they will find this work all they could desire.

DISEASES OF THE EYE. By L. WEBSTER FOX, A.M., M.D., Professor of Ophthalmology in the Medico-Chirurgical College of Philadelphia. With five coloured plates and 296 illustrations in the text. New York and London, D. Appleton & Co.

This new text book on diseases of the eye, by Dr. L. Webster Fox, is to be classed among the larger works on the subject. The book, as the author himself states, is the outgrowth of a series of lectures delivered at the Medico-Chirurgical College and Hospital of Philadelphia during the last ten years. It is very succinct, and at the same time clear: the illustrations are exceedingly good, as are also the anatomical plates. All the latest facts, both in diagnosis and treatment of the various diseases are elucidated; and taken as a whole, this treatise leaves little to be desired. At the end of the book is a glossary, which is rather a novelty in works of this description. The treatment of diseases of the lacrymal duct is fully entered upon. The articles upon albuminuric retinitis, and lid operations, are especially worthy of commendation. The diseases of the orbit are also much more fully treated of than usual.

J. W. S.

MEDICAL DISEASES OF EGYPT. By F. M. SANDWITH, M.D., F.R.C.P., Consulting Physician to H.H. The Khedive, and formerly Director of the Sanitary Department of Egypt. Part I. Henry Kempton, 13 Furnival Street, Holborn, E.C., 1905. Price, \$2.00 net.

This is a book which possesses many attractions. Besides the information of a medical nature which it contains, its literary grace gives it an additional interest. It is full of information presented agreeably,

and to read it is a profitable and pleasant task. The historical references are abundant, and not the least entertaining part of the book. The chapter upon plague is very informing, and contains the newest views upon that malady.

PROGRESSIVE MEDICINE; A Quarterly Digest. Edited by HOBART AMORY HARE, M.D., assisted by H. R. M. LANDIS, M.D., December 1st, 1905. Lea Bros. & Co. \$6.00 per annum. Vol. vii, No. 4.

The contributors to this volume are: William T. Bellfield, M.D., Joseph C. Bloodgood, M.D., John Rose Bradford, M.D., F.R.C.P., H. R. M. Landis, M.D., and J. Dutton Steele, M.D. The subjects considered are: Diseases of the digestive tract and allied organs; liver, pancreas and peritoneum; anæsthetics; fractures, dislocations, amputations; surgery of the extremities, and orthopedics; genito-urinary diseases; diseases of the kidneys; practical therapeutic referendums. We note two references to work done in Canada, one of them to Dr. Richer's experience with Marmorek's serum. This number is unusually good.

INTERNATIONAL CLINICS; A Quarterly. Edited by A. O. J. KELLY, M.D., Volume III, 15 Series, 1905. J. B. Lippincott & Co., Philadelphia; Charles Roberts, Montreal.

The contents of this volume are:—*Treatment*: The therapeutic uses of the Roentgen Rays, or Radiotherapy, by George C. Johnston, M.D. The action of metallic ferments on metabolism, and their effects in pneumonia, by Albert Robin, M.D. The musculo-tonic and diuretic action of formic acid and the formiates, by Henry Huchard, M.D. The symptomatic treatment of tuberculosis, by Noble P. Barnes, M.D. The opotherapeutic treatment of renal insufficiency, by Professor Teissier, M.D., and Serumtherapy, by John W. Wainwright, M.D.

Medicine: Mucous colic, or membranous colitis, by Alexander McPhedran, M.D., Toronto; Injuries and lesions following the toxic use of alcohol, by T. D. Crothers, M.D.; Ulcer of the stomach with contractions, in a boy aged 14 years; cerebral hemorrhage and lumbar puncture; curable albuminuria, by John A. Robinson, M.D.; Addison's disease, by Edward F. Wells, M.D. A case of chronic jaundice and great enlargement of the liver, due to primary carcinoma of the extra-hepatic bile ducts, commencing at the junction of the hepatic ducts, by F. Parkes Weber, M.D., F.R.C.P., and E. Michels, M.D., F.R.C.S.

Surgery: Fractures of the patella, by J. Sherman Wright, B.S., M.D.; Paraffin injections by the "cold" process, by M. Broeckhaert, M.D.; Ethyl chlorid, its value as a general anæsthetic, by Thomas D. Luke,

B.S., F.R.C.S. (Edin.); the differential diagnosis of tumours of the right hypochondrium, by Th. Tuffier, M.D.

Neurology: Acute anterior poliomyelitis, with special reference to the stage of invasion, by Sanger Brown, M.D.; Paralysis agitans; hemiplegia; combined sclerosis and ataxic paraplegia; locomotor ataxia; acute confusional insanity, by Daniel R. Brower, M.D., LL.D.

Dermatology and Syphilis: Syphilitic necrosis of the frontal bone, by A. H. Ohmann-Dumesnil, A.M., M.E., M.D., Ph.D.

Rhinology: Notes on the treatment of hay fever and asthma, by Charles H. Knight, M.D.; Carbonic gas applications in rhinitis, by A. Rose, M.D.

Ophthalmology: Major trauma of the eye in general practice, by William T. Shoemaker, M.D.; Gonorrhœa and conjunctivitis, by William George Sym, F.R.C.S. (Edin.).

Pathology: Cirrhosis of the liver, by Richard Kretz, M.D.

JACKSON ON THE SKIN. By GEORGE THOMAS JACKSON, M.D., Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, New York. Fifth edition, enlarged and thoroughly revised. 12mo., 676 pages, 91 engravings and 3 coloured plates. Cloth, \$2.75 net. Lea Brothers & Co., Philadelphia and New York, 1905.

The fifth edition of this book retains the character which has made it so popular in the past as a ready reference for other than the specialist, namely, alphabetical arrangement of the diseases, concise descriptions of the symptomatology and diagnosis, and a more extended review of the treatment. The book has been brought strictly up-to-date by the inclusion of most of the rare forms of disease.

LECTURES ON THE PRINCIPLES OF SURGERY. By CHARLES B. NANCREDE, A.M., M.D., LL.D., Professor of Clinical Surgery in the University of Michigan. Second edition, thoroughly revised. Philadelphia and London: W. B. Saunders & Co., 1905; Toronto: J. A. Carveth & Co.

Much as we appreciate the general clearness of Dr. Nancrede's style and the often admirable sections upon the rationale of treatment we cannot recommend this work, and that because purporting to be an exposition of the principles of surgery it supports views which we believe to be incorrect; and bases itself at the outset on these views. That the straightforward exposition has interested us we freely admit, but this is a very different matter from endorsing the work for students

or practitioners who desire to gain a correct appreciation of the principles of surgery.

The author at the beginning lays down authoritatively that there is no such thing as "aseptic inflammation"; inflammation "is always due to the action of germs or their products." This he contends is the only logical as well as the scientific view. Unfortunately the logic he adduces in support of this contention cannot be called logic and what is illogical is not strictly scientific.

Here, for instance, is an example of the method of argumentation employed (p. 19):—"I believe and trust that I shall demonstrate that there is only one process of repair, which, when progressing undisturbed, has been misnamed 'aseptic inflammation.' When microbial invasion has been successful certain modifications of the process of repair occur owing to interference with the normal processes, which modifications all confess to be inflammatory and essentially destructive."

[Here follows a sentence without a verb, which, if it means anything, ought to mean the opposite of what it syntactically infers, and next]

. . . . "When the disturbance is removed, the original reparative processes are promptly resumed just where they were interrupted and they proceed exactly as if nothing abnormal had occurred."

"Hence there is no room for such term as 'aseptic' and 'infective' inflammation, but only for 'repair' and 'inflammation' because the latter is always due to the action of germs or their products."

It is not often given to us to encounter in print so pretty an example of the vicious process of arguing in a circle. For what is the argument in its simplest terms. It is as follows:

I believe that there is only one process of repair.

When microbes enter a tissue they set up inflammation.

When they are removed the inflammation ceases and repair alone proceeds.

Therefore, there is only one process of inflammation, and there is only one process of repair.

In passing we would remark that all pathologists do not admit that the modifications set up by microbes are essentially destructive. Some are characteristically proliferative, and we would ask what Dr. Nancrede means by the processes proceeding "exactly as if nothing abnormal had occurred." The very setting up of the reaction is an indication that something abnormal had occurred.

The author next argues that true pus cannot be produced by non-microbial agencies, only a pyoid fluid. Here again the argument rests upon another "ipse dixit." To all intents and purposes he lays down

that true pus cannot be injected into other animals without producing the results which follow the injection of true pus. The 'pyoid fluid,' he states, does not produce those results, if it does not contain a sufficient amount of original irritant. We may equally urge that "true pus" due to microbial irritation may come to be devoid of bacteria and produce upon injection as little effect as do the results of sundry non-microbial irritants. No one, we imagine, but our author would seriously lay down that the essential features of pus is the presence in it of bacteria and bacterial toxins. It is generally conceded that the essential feature of pus is that it is a fluid containing a preponderating number of leucocytes, living and dead.

Here (p. 21) is yet another argument: "Most of the statements usually made by teachers and in text-books are irreconcilable with the microbial causation of inflammation, *hence* if these be true the germ theory is in fact exploded, and should be abandoned."

We have carefully read through Dr. Nancrede's work and find no arguments or considerations of greater strength than these. One and all may be summed up thus: I state that microbes are the sole cause of inflammation, therefore, inflammation is always and only of infectious nature.

With all due deference we would propound that Dr. Nancrede's opinion by itself, contrary, as it is, to the opinions of every pathological of note, is insufficient to convert us from the belief which has come down to us from the centuries, that all conditions associated with redness, swelling, heat and pain, however caused, are to be regarded as inflammatory, and, we would add, all conditions which proceed from like causes and microscopically are found to present like tissue changes. To prove his contention it was necessary for our author to show that the changes which are brought about by microbial irritants are essentially different from those induced by those of other causes of local injury to the tissues. Unfortunately this cannot be done. Non-microbial irritants produce the same order of changes, the only differences being of degree not of kind. Nor is that a constant distinction. The other characteristic is that through microbial growth within the tissues the toxins act not momentarily but continuously until they become neutralised; but here again recurrent and continuous action can be reproduced by certain non-microbial agencies.

In short, the position assumed by our author is untenable, and when a book upon principles is based upon a wrong premise it cannot be safely recommended.

J. G. ADAMI.

A TEXT BOOK OF PHYSIOLOGY: for Medical Students and Physicians.

By WILLIAM H. HOWELL, PH. D., LL.D., Professor of Physiology, Johns Hopkins University, Baltimore. Octavo volume of 905 pages, fully illustrated. Philadelphia and London: W. B. Saunders & Company, 1905. Cloth, \$4.00 net; half morocco, \$5.00 net. Canadian agents, J. A. Carveth & Co., Toronto.

This book calls for more than a passing notice both on account of its own excellence and because of the eminence of the author.

In the preface the author lays down certain principles which have guided him in the preparation of the work. He claims that in writing a text-book for beginners it is necessary to bring within reasonable limits the amount of material; and the necessary reduction should be made by a process of elimination rather than by condensation. The author must assume the responsibility of sifting the evidence and emphasizing those conclusions that seem to be most justified by experiment and observation. He points out that at the present time certain parts of physiology offer peculiar difficulties to the writers of text books. Some former views have been unsettled and much information has been collected which at present it is difficult to formulate. A text book can only hope to give as clear a view as possible of the tendencies of the time.

When we examine the body of the work to see how he has carried out his intentions as indicated above we find a book written in a clear literary style and pervaded throughout by a highly scientific spirit. It does not, it is true, supply many props for the feeble-mind in the form of either analogies or diagrams and the illustrations are fewer in number than in most text books of its size. On the other hand we feel in almost every part of the work that the author has culled his information at first hand from original sources, and we may say that he has presented his material in such a way that we have read chapter after chapter with great delight and with little feeling of weariness.

We looked with interest to see the position taken with reference to certain debatable fields of physiology. First as to whether our author takes his stand with the modern representatives of the old vitalists who attribute much to the selective activity of the living cell or with those who seek to explain all physiological processes by the ordinary laws of physics and chemistry. With this question in our own mind we turned to his accounts of lymph formation, urinary secretion and the cause of the heart beat. We find that on the whole he inclines to the mechanical view, but he is not by any means blind to the other side of the question.

In connection with lymph formation he gives at considerable length the secretory theory as formulated by Heidenhain and the facts on which

it is based, but he considers the facts brought forward in opposition by Ludwig and more recently by Starling as even more convincing. He concludes by accepting "provisionally at least" the so-called mechanical theory. In the account which he gives of the secretion of urine he turns his back upon the Ludwig school and joins hands with Heidenbain who advocated the view that urine is secreted by a selective action of the kidney-epithelium and not, as Ludwig taught, by a mechanical process, of filtration and diffusion. In discussing the seat of the rhythmic activity of the heart he describes certain experiments which point to its being a function of the intrinsic nerve cells, but attaches greater weight to other facts which seem to indicate that rhythmicity is a function of the muscle fibres themselves. He suggests the presence of proper proportions of inorganic salts in the blood as being perhaps the essential stimulus for the heart beat by virtue of the cations (calcium, potassium and sodium) which these salts contain. He concludes by giving his adherence to the myogenic as opposed to the neuro-genic theory of the heart beat.

Many text books entirely ignore the question of the essential nature of a muscle contraction, but here we find several theories mentioned, the prominent place being given to that of Engelmann who compares a muscle contraction to the shortening which occurs in a catgut violin string when it imbibes moisture under the influence of heat. If the theories of muscle contraction are to be given in a students text book at all we should like to see a place found for that of McDougall (*Journal of Anatomy and Physiology*, vol. 32), who believes that the muscle element changes in shape by taking in water under the influence of an osmotic force; that this in turn depends upon the breaking up of a complex constituent of the muscle element into smaller and more numerous molecules.

In the section of the book devoted to the respiratory functions of the vagus we are very glad to find the truth recognized that the normal rate of respiration is maintained by the action of the inhibitory fibres alone. The review columns of this journal have repeatedly emphasized this fact but until now most text books have persisted in explaining the normal rate of breathing by the alternate action of inspiratory and expiratory fibres in the vagus, an explanation which we have long believed to be at variance with the truth.

There are a few points in the book on which we feel inclined to take issue with the author. On page 61 he makes the statement that the creatin of the muscles is eventually excreted in the urine as creatinin. He qualifies this statement towards the end of the book, but we think he should refer here to the very prevalent idea that most of the muscle crea-

tin is broken up in the muscle into ammonia compounds and eventually excreted as urea. We entirely disagree with the explanation given of the predicrotic wave of the pulse as being an elasticity wave due to vibration of the arterial wall. We note that the reference given in this connection bears the date 1872 and we think that if the date were more recent the explanation would refer this wave to the ventricle as it is found not only in the curve of intra ventricular pressure, but even in tracings from the excised ventricle of the frog (Marey). In our edition figure 214, is smudged so as to be undecipherable, and there is a misprint on page 524 where increased is put for decreased on line 12.

We note with interest that a number of the best illustrations consist of tracings taken by an old Montreal physician, Dr. Percy M. Dawson, who is associated with Dr. Howell in the chair of physiology.

On the whole this is the best text book on physiology that has come to this journal for review for a very long time and we wish it every success.

W. S. M.

MOVABLE KIDNEY, a cause of insanity, headache, neurasthenia, insomnia, mental failure and other disorders of the nervous system, a cause also of dilatation of the stomach. By C. N. SUCKLING, M.D., Birmingham, London, H. K. Lewis, 1905.

We have thought worth while reproducing in full the title of this book on account of its singular similarity to those headlines with which the daily papers are adorned. An examination of the book confirms this impression. It begins with an attack upon a respectable member of the profession, it has pictures of patients "before" and "after"; it has *fac similes* of letters from grateful patients; and it contains the usual challenge to unbelievers. The dedication of such a book to "my wife" must be distasteful to a woman of good sense; though acknowledgement is made, "for much valuable help in writing the book," to this lady, "who suffered many years from dropped kidney and who is now cured." We have no desire to pry into these domestic affairs; but it is evident that the possession of an aberrant kidney is not sufficient qualification for such a task of collaboration. If Dr. Osler persists in his ignorance of the results of this condition, and continues to diagnose it as mucous colitis, the fault will not be that of this author who has taken upon himself the labour of his instruction. The list of surgeons who have performed this trivial operation of nephropexy upon Dr. Suckling's cases makes painful reading.

A TREATISE ON DIAGNOSTIC METHODS OF EXAMINATION. By PROF. DR. H. SAHLI, of Bern, Edited, with additions, by FRANCIS P. KINNICUTT, M.D., Professor of Clinical Medicine, Columbia University, N.Y.; and NATH'L. BOWDITCH POTTER, M.D., visiting physician to the City Hospital and to the French Hospital; and Consulting Physician to the Manhattan State Hospital, N.Y. Philadelphia and London: W. B. Saunders & Company, 1905. Octavo of 1008 pages, profusely illustrated. Cloth, \$6.50 net; half morocco, \$7.50 net. Canadian agents: J. A. Carveth & Co., Ltd., 434 Yonge St. Toronto.

This work is admirable: it is not easy to review, in any short space so large a book, and withal, so compact a book. The amount of information it contains in its thousand pages is so great that it gives the impression of having within its covers all that is known upon its subject. Without going so far we may at least say that its additions to the first edition of Sahli's work, which was published in German in 1894, appear to be quite complete. The most interesting of these is Dr. T. C. Janeway's upon the estimation of blood pressure, together with a description of the lately devised instruments. Edited and translated, with additions and corrections, it might seem that a book could get far away from its author's style and intention, but the editors have been conscientious in this matter, and the greatest part of the work comes straight from Professor Sahli; he speaks in nearly every paragraph from his personal experience, which has been a very wide one: subjects such as cystoscopy and x-ray work, he has not included, because as he modestly says, he does not feel competent to teach these subjects from his own experience.

To tell what is in the book would be a compilation of the index: urinary examination takes up more than a hundred pages, the examination of the nervous system nearly two hundred. This of itself is no test of the quality of the book; but testing it in many different directions, we have found that in every instance tried, the details are there, stated with precision and minuteness. In the case of cytodiagnosis, over which Prof. Sahli is by no means enthusiastic, the authors insert a note which seems to be a fair corrective, speaking from the standpoint of this continent. Such slight differences of opinion seem to us to enhance the value of the book to one who wishes a full statement of the case. Several pages upon ophthalmoscopy are delightfully concise, are well illustrated, and will prove most useful to the practicing physician.

The illustrations are apt and useful: a few of the photographs, which have been inserted by the editors, are labelled with the name of the

physician from whose service the patient is taken, and are not of very great value, but this is of no importance as a criticism upon so useful a book.

In fine, Sahli's *Diagnostic Methods* excites our strong approbation, even enthusiasm, and we have no hesitation in recommending it as a book that will fulfil its aims to the utmost.

Messrs. W. B. Saunders' complete catalogue of their publications is a valuable record of activity in publishing medical books in America. New books are being added, and new editions issued with a rapidity that speaks well for the progressiveness of the house. A copy will be sent free upon request.

MESSRS. LEA BROTHERS & Co., announce for publication early this month a new work on Dietics by Robert F. Williams, M.A., M.D., Professor of Principles and Practice of Medicine in the Medical College of Virginia, Richmond.

Medical News.

NOTRE DAME HOSPITAL.

The annual meeting of the Notre Dame Hospital was held on December 12th, 1905, Dr. E. P. Lachapelle, occupied the chair, and Dr. Benoit acted as secretary. According to the report, 2,230 patients had been treated during the year, an increase of four over the preceding twelve months; each patient costing \$1.13 per day, an increase of four cents over the cost last year. Of the 2,230 patients, there were 1,303 men, and 927 women; 2,124 Catholics, 106 Protestants. Of these there were 1,937 Canadian born, and 293 of other nationalities. Of the 2,230 persons treated, 1,871 left the hospital cured or better, 183 were incurable, and 165 died in the hospital. Out of this number 53 were in a dying condition when brought to the hospital. The physicians attending the different dispensaries gave 20,991 consultations during the year, divided as follows: Surgery, 6,585; medicine, 5,001; diseases of the eyes, 3,412; children's diseases, 1,574; skin diseases, 1,072; nervous diseases, 807; women's diseases, 790; dental cases, 193, while 1,557 urgent cases were treated by the house staff. There were given during the year 25,898 free prescriptions, and the ambulance calls were 1,245.

The financial report showed a deficit of \$229.49, the receipts being \$41,374.44, and the expenditure \$41,603.93.

The amount of the contracts already given out for the new Notre Dame Hospital reaches to date \$248,881, and the total cost is estimated at over \$600,000.

Dr. James S. Trotter died at Waterford, November 11th, 1905.

Dr. B. H. Lemon, of Thorold, coroner for Lincoln and Welland, died October 28th, 1905, in the 74th year of his age.

Dr. John Kane, of Aultsville, met with a fatal accident by a runaway horse and died on 7th December in the Cornwall General Hospital.

A branch of the Association for the Prevention of Tuberculosis has been formed in Prince Edward Island. Lieut.-Governor McKinnon is honorary president, and Justice Fitzgerald, president. The vice-presidents are: Queen's County, Mayor Kelly; King's, John McLean; Prince, Dr. Alexander Ross Alberton.

The Manitoba Medical Alumni Association held their annual meeting in Winnipeg on November 10th, to elect officers for the coming year. The following were chosen: President, Dr. Popham; vice-president, Dr. Bruce, Dominion City; secretary-treasurer, Dr. Vrooman; executive, Doctors Chestnut and Sharpe. During the course of the session it was decided to hold quarterly meetings, and to take an active part in the furnishing of the new medical college.

Work on the new Manitoba medical college is being rapidly pushed. It is expected that the building will be ready for occupation at the beginning of February.

Retrospect of Current Literature.

SURGERY.

QUINCKE: "The Diagnostic and Therapeutic Value of Lumbar Puncture." *Deut. Med. Woch.*, No. 46, 1905.

In the course of a long recapitulation of the advantages of the procedure, Quincke points out two or three things which may be added to the procedure as it is generally done in this country. He says it is essential that no puncture should be done without an instrument to measure the pressure in the spinal canal: by the use of a narrow graduated glass tube attached by rubber tubing to one of the arms on the canula the

pressure can be measured while the fluid is allowed to run out through the other. The regular mercury manometer is even preferable: normal pressure in the canal is 125 mm. of water. By reason of respiration and blood pressure it varies 10-30 mm. What we consider as high intraspinal pressure may be from 300 to 700 mm. Stated shortly, some of his directions are as follows: patient in left lateral position, with lumbar kyphosis: perforate in 2-5th lumbar spaces: immediate measurement of pressure: with normal pressure and for diagnosis, removes only 1-5 cc: draw off fluid slowly, always under control of pressure-measurement: final pressure not to be lower than 80-100 mm. for normal cases, not less than 120 mm. when the pressure is rapidly lowered, if the preliminary pressure is very high, lower to 40-60° of its first amount: in children it may be allowed to fall to 30-40 mm. Never aspirate the fluid: after withdrawal of fluid, let the patient remain in bed at least 24 hours.

VON LEUBE: "The International Tuberculosis Congress at Paris. *Deut. Med. Woch.*, No. 46, 1905.

Professor Von Leube thus reports from the paper of von Behring, the procedure which has excited so much interest:

"The new principle consists in impregnating the living cells of the organism with substance which is obtained from the virus of tuberculosis and is called TC. This pre-exists in the bacillus, and has a syntiotic action in the body cells especially in those of lymphoid tissue. It becomes an integral part of the cells and is metamorphosed by them, when it is called TX. Upon the composition of TC, depends the protective reaction against tuberculosis, which is a cellular as opposed to a humoral antitoxic immunity. To isolate TC, v. Behring forces it from certain bacillary substances which hinder its therapeutic action; these are, a very toxic substance, called TV, soluble in water, another toxic substance, containing globulin, TG, soluble in neutral salt solution, and other non-toxic substances soluble in alcohol, ether and chloroform. What remains after the freeing of the bacilli from these substances, constitutes Behring's "Rest bacillus." This preserves the form and staining qualities of the tubercle bacillus, but can by suitable preparation be converted into an amorphous substance, which is absorbed by the lymphoid tissues of guinea-pigs rabbits, goats and other animals, and bestows upon the cells eosinophilic properties. Parallel with this metamorphosis, wrought by TC, develops the immunity of the organism. A specially important fact is that TC is not capable of reproduction but possesses the power to cause a Laennec's tubercle, which will not soften or become caseous: this form of tubercle is curable, in that it will disappear without leaving any trace

in the tissues. According to experiments on different animals, v. Behring believes that this substance can be used without danger, as a therapeutic measure. Its therapeutic qualities and its harmlessness must be further investigated and determined."

HOFFMANN, ERICH: "Spirochæte pallida in a macacus inoculated with syphilitic blood." *Berl. Klin. Woch.*, No. 46, 1905.

The experimenter took blood from a man who had syphilis, untreated, for six months, and rubbed it into scarified areas on the eyelids of the ape. Three weeks later a papule developed, from which scrapings gave numerous typical examples of spirochæte pallida.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

HENRY G. SPOONER. "Non-Gonorrhœal Urethritis." *Medical Record*, November 11th, 1905.

Henry G. Spooner sketches the history of the study of urethritis, which was formerly confused with syphilis, and later was thought to be invariably due to the presence of the gonococcus. Now it is recognized, he says, that other micro-organisms may give rise to urethritis, as has been shown by the experiments of Bockhart, Legrain, and others who inoculated the urethra with various pyogenic organisms and obtained positive results. Such cases are not as rare as is usually supposed in this country, and they require consideration at the hands of clinicians. From the clinical point of view, he admits, differential diagnosis is impossible, but as a rule in non-gonorrhœal urethritis the incubation period and the course are shorter and less painful than in the specific form.

E. PALIER. "The Stomach in Pulmonary Tuberculosis and the effect of Gastric Juice on the Bacillus Tuberculosis." *Medical Record*, November 11th, 1905.

E. Palier has studied the gastric conditions present in a number of cases of pulmonary tuberculosis, most of the patients being men between the ages of 22 and 45. He describes several of these, and says that his observations lead him to believe that in about 60 per cent. of the

cases of incipient consumption there is hyperchlorhydria, in 20 per cent. the stomach is about normal, and in about 20 per cent. there is hypochlorhydria. The effect of gastric juice on the tubercle bacilli in the sputum swallowed was also investigated. It appears that the normal gastric juice is bacteriolytic to the tubercle bacilli, but *in vitro* the process is very slow. The author believes that in the stomach it is much more active, so that ordinarily no bacilli can pass the normal stomach and reach the intestine in virulent condition. In hypochlorhydria they undoubtedly can, and also under any conditions on repeated ingestion some may find opportunities to slip through and cause disease. The frequency of hypochlorhydria with hypersecretion in pulmonary tuberculosis, the author believes, explains the frequency of gastric ulcer in this disease.

ARPAD G. GERSTER. "The System of American Hospital Economy."
Medical Record, December 2nd, 1905.

Arpad G. Gerster, in discussing this subject, first compares the daily cost per patient in different hospitals in this country and in Europe, the result showing that in America the outlay is very much greater. These facts serve as arguments in favour of the view that in order to meet successfully the conditions now existing when the large hospitals usually show an annual deficit, retrenchments is the proper remedy, and not an appeal for general liberality on the part of the comparatively few philanthropists, who furnish most of the funds for the hospitals. In analyzing the conditions which underlie the extravagance and waste in hospital management in this country, the author emphasizes the necessity for more active participation in the executive control by the members of the medical staff. The plans of organization of the great hospitals of Hamburg, Berlin, Vienna, and Budapest, are described in detail, the essential features being that the position of the lay superintendent of American hospitals is occupied by one or more salaried medical directors, the attending staff is very limited, so that the service is a permanent one with salaried visiting physicians and surgeons, and the house staff also is composed of paid assistants, whose positions are permanent. In this way all of those concerned are able to give the necessary time to details of economical management, and also acquire the experience necessary to carry them out with effect. The present plan of conducting hospitals here resembles that in use in mediæval Europe, and the author, predicts that sooner or later a system similar to that now employed in Europe must be adopted. While opposition

to reform in this direction is to be expected, restriction in the number of those who attend at hospitals is essential to economical improvement and is urgently required also to effect a betterment in the care of the individual patient.

W. J. BUTLER. "Typhoid Fever in Children." *Journal A. M. A.*, November 11th, 1905.

After reviewing the literature, W. J. Butler, Chicago, gives a clinical analysis of 210 cases of typhoid fever in children, 106 boys and 104 girls. The duration of symptoms, before coming under observation, was, on the average, seven days. In 107 in whom the conditions of the bowels was ascertainable, 69 had diarrhoea, 31 constipation, and in 7 the bowel movements were only 29 of the 210. After coming under observation, anorexia and furred tongue were the rule. Vomiting occurred in 28 cases, in 13 of which it had been present during the onset. In many cases it seemed to precede more serious symptoms of complications. In 184 patients accurately noted as to this point, constipation existed in 100 and diarrhoea in 84. Tympany of varying degree was usually present after the first week, and in some cases was an annoying symptom extending into convalescence. The spleen was palpable in 134 out of 148 cases examined. Roseola was found in 115 of the 210 cases, seldom before the sixth day of the disease. It was usually absent in the mild and abortive cases. Epistaxis occurred in 12 cases during the course of the disease, in one case several times and with repeated bowel hæmorrhages, terminating fatally. The average duration of temperature in all cases was 17.3 days. The disproportion between pulse rate and temperature first noticed by Roger in adults, holds good for later childhood, but in very young children they run more or less parallel. A dirotic pulse was seldom found. Blood counts were made in many cases, chiefly with reference to the leucocytes. The weekly averages were as follows: First week, 6,511; second week, 7,200; third week, 6,740. Some interesting variations are recorded. The Widal test was made in 96 cases, with 86 positive results. Butler does not consider the negative tests as of much significance, as only one, or at least two, trials were made. In 40 patients the reaction was positive within the first four days after coming under observation. In some it was considerably delayed. Nervous symptoms, headache, drowsiness and delirium were rather frequent and there was generally some dullness or apathy. Ehrlich's urinary test was made in a number of cases with

usually positive results. Butler does not consider it, however, as of much diagnostic value. Relapses seem to be more common in children than in adults, and in girls than in boys. They occurred in 31 of the 210 cases, in five cases fatal. The mortality, as usual lower in children, was eleven, or 5.2 per cent. Among the more interesting complications noted were ocular paresis in the first week of the disease in one case, several cases of meningeal involvement, and two cases of neuritis occurring after relapse. In some of the severe cases, evidences of myocardial involvement were present. Intestinal hæmorrhage occurred in 13 patients, of whom four died, one from perforation occurring after a hæmorrhage. Details of the fatal cases are given. The treatment was symptomatic and hygienic. Butler, from his experience in these cases, is inclined to think that the enlargement of the diet of typhoid patients, advised by some, is inadvisable so far as children are concerned. Milk, diluted for infants and very young children, with albumin water, and the usual cereal gruel diluents, such as barley water and rice water as drinks, he thinks, are best for this class of cases. Care in diet during the early part of convalescence is as important as during the height of the attack. Hydrotherapy was also employed, tubbing in practically all cases. The temperature was the usual guide to its employment, also the nervous symptoms which it seemed to benefit. In very severe intoxication, high enemata of salt solution were used with advantage in increasing elimination, especially renal. Intestinal antiseptics, salol, acetozone, etc., did not seem to be of any particular advantage. Two of the four patients with perforation were operated on, but all died.

OBSTETRICS

UNDER THE CHARGE OF J. C. CAMERON AND D. J. EVANS.

TOXÆMIA OF PREGNANCY IN RELATION TO HYPEREMESIS GRAVIDARUM AND ECLAMPSIA. By DAVID JAMES EVANS, M.D., Lecturer in Obstetrics, McGill University.

In the *Journal of Obstetrics and Gynæcology of the British Empire* for April, 1905, Thomas G. Stevens has reviewed some of the recent literature on hyperemesis gravidarum. The various theories advanced he groups into four classes as follows:—

1. That it is a reflex act due to some lesion of the pregnant uterus or of the pelvic organs. Graily Hewitt in 1877 advanced this view.

Read at the McGill Medical Reporting Society, November 13th, 1905.

claiming that retroflexions and other like conditions by reflex irritation brought about vomiting.

2. That it is a functional neurosis of the central nervous system. Kaultenbach claimed that the vomiting was hysterical, and has been strongly supported by Gräfe, who dwells on its frequent occurrence in primiparæ, and that suggestion so frequently relieves the condition.

3. That it is a reflex stomach neurosis.

The upholders of this theory claim the initial cause is irritation of the nerve endings in the uterus or pelvic organs quite independent of any actual lesion.

4. That it results from a form of auto-intoxication from the alimentary tract, the ovum itself or from bacterial infection.

Dirmoser claims that the poisons are largely generated in the intestinal tract as a result of impulses from the growing uterus travelling by the vagus and sympathetic nerves to the stomach and intestines. These impulses result in an increased flow of mucous which interferes with the normal reactions. He asserts that he has been able to demonstrate the presence of such poisons in the intestinal tract of cases of hyperemesis, and places great importance on his findings in the analyses of the urine of such cases. The deleterious action of these toxins are manifested chiefly in the liver and kidneys.

Behm believes that the toxins are generated in the growing ovum, chiefly in the syncytium. The disintegration of the villi in the early months of pregnancy and the subsequent absorption of their debris into the blood stream is the source of the toxic substances. This process is usually complete by the middle of pregnancy, hence the disappearance of the troublesome symptoms about this time. Veit and his school support the theories of Behm.

Baisch points out that hyperemesis is clearly connected with the implanting of the ovum in the uterine wall, seeing that it most commonly occurs in that period of pregnancy connected with placental development.

Edward P. Davis ("Toxæmia of Pregnancy," *Am. Jour. Med. Science*, February, 1905) thinks that various forms of toxæmia may be noted during pregnancy. He distinguishes between hepatic, intestinal, thyroid, and renal intoxication and believes that syncytiolysin, a placental ferment, has an important role in the causation of eclampsia. He quotes the work of Bell (*Jour. of Obste. and Gyn.*, of Brit. Emp., Sept. '02), who found that blood serum from fatal cases of eclampsia, taken before death, proved toxic to animals, causing convulsions and death,

with the development of characteristic lesions to follow its intra venous injection. Serum of two nephritis cases did not produce any effect when injected into animals.

James Ewing ("The Pathological Anatomy and Pathogenesis of the Toxæmia of Pregnancy," *Am. Jour. Obstet.*, February, 1905) looks upon the toxæmia of pregnancy as being the result of functional disturbance of the liver, usually, but not necessarily attended with severe anatomical lesions of this organ, and secondarily with functional disturbance and anatomical lesions of the kidneys and other organs.

He reports three fatal cases of eclampsia, all with hepatic lesions of various intensity. In the first case a hæmorrhagic hepatitis was present. The liver was small, soft, and showed minute hæmorrhagic foci. Microscopically there was a uniform, intense, granular, hydropic and fatty degeneration of the protoplasm. These alterations he considers pathognomonic of eclampsia and states that they are to be found in 95 per cent. of fatal cases.

The second case, four and a half months pregnant, showed acute yellow atrophy of the liver. No albumin had been found in the urine and no casts. The liver was reduced in size and showed hydropic and fatty degeneration of the inner two-thirds of the lobules, while the periphery showed slight granular and fatty degeneration.

(This case Williams would class as one of hyperemesis gravidarum, as the liver condition corresponds exactly to that he has found present in his cases.)

The third case, six and a half months pregnant, with albumin in the urine, was found to show in the liver no striking gross change, but the cells exhibited a diffuse fatty, and granular degeneration with foci of intense degeneration and of partial necrosis.

Three cases of hyperemesis are then recorded, all with marked hepatic lesions. One showed typical yellow atrophy, while in the others the livers were not reduced in size. All exhibited hydropic and granular degeneration of the inner portions of the lobules.

Ewing concludes that a failure of the oxidizing capacity on the part of the liver is responsible for the clinical manifestation of the toxæmia of pregnancy. For this reason the protied derivatives chiefly amino-acids and ammonia, are not converted into urea, but circulate free in the blood in poisonous form, and are to some extent excreted by the kidneys.

The exact identity of the poisons has not been determined for they are not fully accessible to present chemical and biological methods. The

complex nature of these poisons renders less obscure the fact that the clinical manifestations of the toxæmia of pregnancy vary from mild vomiting to acute yellow atrophy.

Ewing considers the urinary changes very important for diagnosis and prognosis. Instead of urea, uric acid, ammonia, leucin and tyrosin, and other unoxidized proteid radicles appear in the urine, and instead of sulphates there are unoxidized sulphur compounds. The examination for various unoxidized proteid derivatives will prove a fairly reliable indication of the seriousness of the case.

J. Whitridge Williams ("On the Pernicious Vomiting of Pregnancy," *Centralblatt für Gyn.*, No. 30, 1905) divides the causes of pernicious vomiting of pregnancy into three groups, the reflex, the neurotic, and the toxæmic.

In the first group the vomiting may be due to the presence of abnormalities of the generative tract or ovum, which existed prior to the onset of pregnancy, or are coincident with it.

Kaltenbach's views as to the neurotic origin of vomiting he considers far too extreme, but he believes that many cases are purely of this type. Neurotic vomiting should be diagnosed only after excluding organic lesions, and demonstrating the absence of toxæmia, by a most thorough examination of the urine.

The conception of the toxæmic nature of vomiting of pregnancy has steadily been gaining ground.

Williams mentions as being among the most important of the theories advanced concerning the nature and origin of the toxic material:—

- (a) Secretion of the corpus luteum.
- (b) Secretion of the ovary.
- (c) Absorption from the intestines.
- (d) Hepato-toxæmia (Pinard and Bouffe de St-Blaise).
- (e) Invasion of the maternal organism by foetal elements, the syncytio-toxin theory of Veit, Behm and others.
- (f) Its identity with eclampsia on the one hand and acute yellow atrophy on the other. (Champetiere de Ribes, Bouffe de St-Blaise, Stone, Ewing and Edgar.)

Matthews Duncan in 1879 suggested the relation between acute yellow atrophy and pernicious vomiting. Stone in 1903 published a case, the liver of which has been examined by Williams, and found to present changes identical with those in his own case.

These consist in the degeneration and necrosis of the central portion of the liver lobule, and the fatty degeneration and necrosis of secretory

portion of the kidneys, and can only be explained by the assumption that some powerfully toxic substance is circulating in the blood.

Williams has found five cases reported in literature in which acute yellow atrophy was found at autopsy upon patients dying of vomiting of pregnancy, as well as five others in which marked fatty degeneration of the liver was noted. In many of these the condition of the liver was considered accidental and the vomiting referred to something else.

He considers that at present we are absolutely ignorant of the exact nature of the toxic substance or substances concerned, though it is natural to suppose they are metabolic in origin and are directly concerned with pregnancy.

All that can be stated definitely is that in some cases of pernicious vomiting we have to deal with a toxæmia, which gives rise to serious lesions in the liver and later in the kidneys, and that the latter are secondary in character, as is indicated by the fact that the urine does not contain albumin until shortly before death.

He points out that in these cases there is a marked increase in the percentage of nitrogen put out as ammonia, compared with the total nitrogen content of the urine, so that the former, instead of being three to five per cent. as is normal, may rise to 16, 32, or even 46 per cent., as in several of his cases.

This increased ammonia coefficient may be due to destruction of the liver preventing the formation of urea and the escape of the less oxidized forms as ammonia; or, it may be due to an attempt to neutralize an excessive production of acid—a so-called acid-intoxication. He considers the latter as the most likely explanation.

Williams recommends that in cases of vomiting when the ammonia coefficient is high, abortion is indicated as offering the only hope of checking the toxæmia and saving the life of the patient.

His experience leads him to consider that an ammonia coefficient of 10 per cent. represents the danger signal, and that as soon as it is reached interference is demanded.

In the reflex and neurotic forms of vomiting the ammonia output remains normal, hence it is not only a means of diagnosis but a valuable guide to treatment.

Williams does not agree with Stone and Ewing that eclampsia and acute yellow atrophy are manifestations of one and the same toxæmia. He considers that there are at least two toxæmias of pregnancy if not more.

In both eclampsia and pernicious vomiting lesions occur in the liver, but they differ in character. In eclampsia the lesions begin in the

portal spaces and invade the lobule from the periphery toward the centre; while in vomiting of pregnancy the necrosis begins in the centre of the lobule, spreads peripherally, and never involves the portal spaces. in this view he is supported by Schmorl.

In eclampsia and pre-eclamptic toxæmia there are marked signs of involvement of the kidneys and general circulation, as manifested by scanty urine in proportion to the intake of fluid, the early appearance of pronounced albuminuria, the presence of casts, and œdema.

In vomiting of pregnancy on the other hand the urinary output is diminished only as the intake of fluids is interfered with, and albumin and casts are present only in the last days, or hours, of life, while œdema is absent.

The chemical examination of the urine shows an equally marked contrast between the two conditions. In eclampsia the total amount of nitrogen is greatly diminished, while the ammonia coefficient remains practically normal. In vomiting of pregnancy, on the contrary, in spite of the scanty amount of urine, the total amount of nitrogen remains approximately normal, while the ammonia coefficient is wonderfully elevated. A high ammonia output is a favourable prognostic sign in eclampsia, and a very ominous one in vomiting of pregnancy.

Ellice McDonald ("Toxæmia of Pregnancy with Vomiting," *Am. Jour. of Obstet.*, September, 1905) in a very excellent article reviews extensively the literature, dwelling upon the characteristic liver changes. He reports a case, which was attended with neuritis, jaundice, vomiting, etc. Sepsis followed incomplete curettage. A diagnosis was made of toxæmia of pregnancy with vomiting. Acute yellow atrophy of the liver. Metral stenosis, mild bronchitis, puerperal neuritis, retained secundines; and the patient recovered. The diagnosis of acute yellow atrophy of the liver may be questioned as it is based only on the presence of jaundice, the fact that there was no enlargement of the liver, and that the urine contained albumin, casts and leucin and tyeosin.

He quotes Gueniot's figures as showing that termination of the pregnancy has a direct effect on the mortality. In cases without abortion the mortality was 92 per cent.; with spontaneous abortion, 35 per cent., and with induced abortion 52.3 per cent. Hirst's figures show that in cases treated by abortion the mortality was 25 per cent.; without abortion 49.1 per cent. Thus, it will be seen that toxæmia of pregnancy with vomiting is a disease which has a mortality even higher than that of eclamptic toxæmia, of which we may take Meyer-Wirg figures (27.3 per cent.) as a very fair estimate."

He closes his paper with a discussion of the question, "Do experi-

mental liver necroses aid in explaining the liver lesions of toxæmia of pregnancy?"

McDonald concludes from a careful study of the work of experimenters, that:—The similarity of these experimental liver lesions to those of the toxæmia of pregnancy with vomiting and eclamptic toxæmia, is evident. The severity and extent of the lesion in experimental necrosis depends on the amount of the dose. The periphery of the lobule is the seat of changes in experimental necrosis with moderate doses, while, with large doses, the middle and central portions are also attached.

Review of the experimental work demonstrates that it is evident that hemagglutinins, by the production of agglutinative red blood corpuscle thrombi, may cause experimental necrosis. That the same mechanism holds for the liver lesions of eclamptic toxæmia cannot readily be proven. The observations of Viet and others, however, concerning the presence of hemagglutinins in the mother's blood are suggestive.

He considers that there is evidence that, in the toxæmia of pregnancy, an agglutinative substance occurs in the blood and that this, by causing the clumping of the red cells, leads to the occurrence of liver necrosis. It is possible that there may be, in addition hemolytic and other toxic substances. There is no proof at present that such a hemagglutinin is produced by the placental cells.

A. Dienst ("Das Eklampsiegift," *Zentralb., für Gyn.*, No. 12, 1905) elaborates a new theory as to the origin of the toxæmia. Injecting milk into the umbilical vessels Dienst noticed that the fluid escaped from large vessels on the maternal surface. Testing a large number of placenta he noted that while the milk escaped in a considerable number of cases, it did so much more freely in the case of eclamptic placenta. Testing this point when the placenta remained in situ, by means of injections of methylene blue, he found that in certain cases the urine was stained blue. He concludes that there must be in such cases a free communication between the foetal and maternal circulations. He cites the work of Schmorl, Pels-Leusden and others who report finding actual chorionic villi departed into the maternal circulation.

Then Dienst records a very extensive series of experiments on the agglutination and hæmolytic reactions between maternal and foetal blood. The maternal blood was obtained from the retroplacental hæmorrhage, or from venesection during puerperium, the latter being mainly cases of albuminuria and eclampsia. The blood of 118 mothers and their offspring was tested. In 24 cases the maternal blood caused agglutination and disintegration of the foetal red corpuscles. In these

24 cases the placenta were impermeable in 15 cases, all of which remained healthy. In these 15 cases the urine was free of albumin. In the remaining 9 cases seven were eclamptic and two had albuminuria. From these observations Dienst concludes that albuminuria and eclampsia take place when the maternal and foetal blood behave, the one to the other, as does a mixture made from the blood of two distinct species, and when a free communication exists between the foetal and maternal circulations. Thus a freely circulating mixture of two heterogenous samples of blood gives rise to eclampsia and albuminuria gravidæum.

The action of the maternal agglutinative substance brings about the agglutination and distinction of the foetal blood cells. These clumped cells are the cause of plugging of the fine capillaries in the liver and hence the changes which occur in this organ. He concludes his paper with a detailed explanation of the various morbid conditions found in the organs and blood of eclamptics according to the views he elaborates in his very interesting paper.

Labhardt ("Bemerkungen zu den biologischen Theorien des Eklampsie," *Zeitsch. für Geburt.*, Bd. 4, iv., 12) opposes the biological view as to the origin of the toxæmia of pregnancy. He combats the views of Viet, Ascoli, Weichhardt and others, chiefly from the clinical standpoint, making a very strong argument. He concludes that the biological hypothesis has not advanced our knowledge of the origin of eclampsia, that placenta and child are not "foreign" to the mother and the resorption of their tissues leads to no damage of the kidneys, nor of any other organ, nor does it give rise to eclampsia.

With regard to the experimental studies of Weichhardt, Ascoli and others, he considers that where such delicate chemical reactions are studied, the identification of results in such a heterogenous material is absolutely impossible in the present state of our knowledge.

A very interesting series of cases have been reported by Brauer (Munch. wed Wochnsche 26, '05, Oettinger, Cathala and Trastour, and Bar *Bulletin de la Soc. d'Obstet. de Paris*, No. 4, '04) illustrating the selective action of the toxic substances in the pregnant condition. The cases include various forms of neuritis and paralysis. In Brauer's case paretic symptoms were present in two consecutive pregnancies. The symptoms began as early as the first month and gradually increased till both sides of the body were completely paralyzed. Dyspnœa was present in the last weeks and there was partial aphonia, but no speech or eye disturbances. There was no albumin in the urine, though œdema of legs and arms developed in the last weeks of pregnancy. Following

delivery complete recovery took place. He refers to the case as one of toxic myelitis.

In Oettinger's case there was a condition of "polyneuritis," chiefly of the large nerve trunks, with some slight participation of the facial nerve. The general condition of the patient was good, there was no visceral lesion, no albuminuric and no elevation of temperature. Recovery followed delivery of twins.

He points out the relation of the cases to pernicious vomiting and considers the cause to be the presence of some toxic substance due to the pregnancy.

In the case reported by Cathala and Trastour, besides well marked paralysis there were mental symptoms present. The patient went to term and recovery followed delivery.

Bar reports a case of atrophy of the optic nerve associated with pregnancy. In the middle of the first pregnancy his patient complained of dimness of vision in the right eye. Panas examined the case and reported some papillary oedema, but no retinitis. There was no albuminuria. The condition improved slightly after delivery. In the second pregnancy the same symptoms came on in the fourth month, and progressed rapidly till the sight of the eye was completely destroyed. Panas diagnosed complete atrophy of the optic nerve, and blindness was permanent. Bar concludes that these cases of mononeuritis belong to the same series as the cases reported by Ottinger, etc., and that the condition may be present in one nerve only or that several may be attacked.

In some cases he believes he has seen the nerve of taste affected, and thinks that loss of hearing sometimes associated with pregnancy may be due to a similar condition.

Discussing the toxic nature of the pernicious vomiting of pregnancy he considers that the theory of intoxication is without doubt applicable to other troubles associated with pregnancy less studied, more elusive, and of a nature scarcely known.

At the annual meeting of the Post-Graduate Medical Society, of Toronto, held on December 14th, at the Toronto General Hospital, the officers were elected as follows: Honorary president, J. N. E. Brown, M.D.; president, E. C. Burson, M.D.; first vice-president, L. Killoran, M.D.; second vice-president, R. G. Snyder, M.D.; secretary-treasurer, H. Spohn, M.D.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held November 3rd, Dr. F. G. Finley, Vice-President, in the Chair.

CONGENITAL SYPHILIS.

H. B. CUSHING: This little boy is shown to the Society to-night on account of two or three unusual features in his case. The first that can be learned of him was in November, 1902, when, at the age of 5 years, he was admitted with his mother to the Montreal General Hospital. The mother died within a week of uræmia. At the time of her death she had several tertiary syphilitic ulcers and bone lesions, which she said had been present at intervals for six years. The boy was suffering from acute dacryo-cystitis, suppurative otitis media, and perforating ulcers of the hard palate. The whole condition was diagnosed as due to congenital syphilis with secondary infections. From this time he was kept under treatment with grey powder for two years. His condition rapidly improved and he remained practically well. Treatment was stopped in the fall of 1904, and since then he has steadily failed, until he came under notice again in August, 1905, for emaciation and continued fever.

The patient was then 8½ years old, but was stunted and undeveloped, so that his various measurements were those of a child of 5 years. He was much emaciated, weighing only 27 lbs. His head was large in proportion to his body, the greatest circumference being 21 inches. His forehead was prominent and his cranium asymmetrical. He had an upturned nose with rather sunken bridge, his jaw was prognathous, and his mouth was kept partly open. His teeth (2nd dentition) were irregular and rough, the upper incisors being separated and peg-shaped, but not typical Hutchison teeth. For the rest, he had a small chest with poor expansion, a large protuberant abdomen, he had no deformities of the extremities. These peculiarities may all be seen in the patient this evening, and while more or less characteristic of syphilis might still be largely accounted for as due to rickets. On further examination his heart and lungs showed no abnormality. His liver and spleen were both greatly enlarged, the liver descending 4 inches below the costal margin, hard, and with a smooth surface; the spleen was palpable two inches below the edge of the ribs on the left side and was also hard and rounded. There was no evidence of fluid in the abdomen. There was slight generalized enlargement of the lymphatic glands. His urine on repeated examinations was increased in amount, always pale

with a spec. grav. of 1001-1004; it contained 1 to 3 grammes of albumen to the litre, and on microscopical examination showed a very few granular casts. A blood count showed moderate secondary anaemia with no leucocytosis. He had an irregular fever, the temperature only occasionally dropping to normal, but usually ranging from 99° to 103°. This pyrexia lasted for at least seven weeks.

When his family history was obtained and a diagnosis thus established, a course of mercurial inunctions was instituted followed by potassium iodide internally. Under this treatment there was an immediate improvement. His temperature remained normal, his appetite returned, he gained rapidly in weight and strength, the liver and spleen diminished in size, although they are both still palpable, and, lastly, there was a gradual change in the urine, the albumen diminished to a mere trace, and the sp. gr. rose to 1012-1014, occasional hyaline casts are still to be found.

The special points of interest in connexion with the case were:—*first*, the return of symptoms after two years' steady treatments with mercury, illustrating the tendency of congenital syphilis to become active at the time of second dentition. *Secondly*, the possibility of amyloid disease. The urine showed the characteristics of this disorder and the large symmetrical enlargement of liver and spleen were suggestive. On the other hand, amyloid disease is regarded by most authorities as being very rare with congenital lues, and the possibility of diffuse syphilitic hepatitis and nephritis must be considered. The improvements of the urine under active anti-syphilitic treatment is noteworthy. *Thirdly*, the irregular pyrexia; no other cause could be found for this than the syphilis, and it disappeared almost immediately on treatment. The case seems to come under the same category as those recently described in the Montreal MEDICAL JOURNAL, illustrating the occurrence of fever with tertiary syphilis.

G. G. CAMPBELL, M.D. The question of prognosis seems to me to depend very much upon the early treatment. If the patient is treated systematically and carefully during the secondary stage there must be a large number of cases where there is never any appearance of tertiaries, but once the tertiaries have appeared one can never guard against recurrences. This boy apparently comes under treatment in the tertiary stage and thus the prognosis as to after life is not very good; but the cases of congenital syphilis treated in early infancy are probably more successful, just as in those cases of the acquired type that are treated early.

F. J. SHEPHERD, M.D. This is an interesting case, and Dr. Cushing

is to be congratulated on bringing it before us this evening. On looking closely at the child one can see that it is a syphilitic case, and some of these cases are most difficult to cure. I should like to ask Dr. Cushing what antisyphilitic treatment he used, as there are a great many different ideas of just what is best in these cases.

H. B. CUSHING, M.D. The only point to mention is as regards the treatment. While in the Orphan's Home he was given doses of grey powder for about a year, and showed some improvement under this. The last treatment which he has received under me was a course of inunctions of mercury, and doses of potassium iodide, which he is still taking, and he has, as I have said, showed a very considerable improvement.

DENTIGEROUS CYST.

C. C. GURD, M.D. showed a patient upon whom he had operated for dentigerous cyst.

F. J. SHEPHERD, M.D. These are comparatively rare cases; I have had two, and both have been in connexion with the wisdom teeth; one was diagnosed as cancer of the jaw, and sent to me for operation as such.

F. R. ENGLAND, M.D. A very interesting and important point when considering the diagnosis of this case was the absence of the left canine tooth.

A. E. GARROW, M.D. I had a case of dentigerous cyst also in the upper jaw involving the bicuspid tooth, which was small in size, and lay in a small cavity lined with a sort of velvety membrane.

PATHOLOGICAL SPECIMENS.

J. G. ADAMI, M.D., showed the following specimens: (1) Red infarcts of the liver; (2) Obliterating inflammation of hepatic veins.

A. E. GARROW, M.D. As to the condition found on operation in the case of obliterating inflammation of the hepatic veins, what struck one was the large quantity of clear, serous looking fluid. This was rapidly emptied by siphonage, and both the visceral and parietal layers of the peritoneum were carefully inspected. There was no inflammation whatever, even of the mildest grades of chronic peritonitis; not a single adhesion; no enlarged mesenteric glands; liver apparently normal, edge sharp; and the only unusual condition found was the enlarged spleen. We thought of a possible obstruction; but, on examining the vessels, no tortuosity, nor varix nor dilatation of any kind was noted. It seemed to be a purely dropsical condition, without, as we thought, any apparent obstruction; no evidence of any portal obstruction. The vessel was quite large and could be traced up to its fissure in the liver.

The fluid was collected at the time of operation, and showed a low specific gravity, 1004. Some guinea pigs inoculated by Dr. Keenan showed negative results for tuberculosis.

INFLAMMATION OF UTERINE PASSAGES.

W. W. CHIPMAN, M.D. read a paper upon some clinical considerations in respect of inflammation of the uterine passages.

A. LAPHORN SMITH, M.D. A point of interest mentioned in the paper is the fact that the tubes and ovaries, as well as the uterus and vagina are bilateral organs and this I think is not generally realized by general practitioners who often speak of gonorrhœal salpingitis of the left side when, in fact, there is no such condition; it is bilateral, only one side is more than the other. Dr. Chipman has done well to call attention to the colon bacillus as a factor in the causation of pelvic disease. I feel convinced that constipation in which there is an enormous amount of colon bacilli has a great deal to do with pelvic organs. And this also has direct importance on the difficulty of the diagnosis between a chronic appendicitis and chronic salpingitis, as the doctor has so clearly brought before us. We often see the two organs so densely adherent to each other that even when lifted out and detached we are not able always to say in which of these two the disease began. Many cases have been published which show that a diseased appendix has set up a salpingitis and that a salpingitis has set up appendicitis. This is a very important matter, as immediate operation is the worst thing to do in acute salpingitis, while in acute appendicitis it is absolutely called for. Operation on pus tubes before the acute stage is over is very dangerous. With regard to external applications the ice bag seems more suited for the purpose of checking microbe fermentation than poultices, which latter is now rarely used. I do think that if there are any cases in which morphia or opium is justifiable it is in these cases, as it is a matter of life and death to have the tubes walled off by adhesions. With regard to the quantity of water for douches this, I think, is quite an important matter, eight quarts is the very least that is necessary for a satisfactory douche, and even that should be given very slowly so as to last for a quarter of an hour.

I am so little anxious to operate on these cases of gonorrhœal salpingitis that I have several hundred patients at my office and clinics who enjoy fairly good health on condition that they come for treatment a few times every year. They are told that an operation would give a permanent cure, but they are not urged to have it. Of their own accord, however, they generally ask for the operation when the attacks

of pain require almost constant treatment. I find iodine to the vaginal vault much more effective than on the skin. Electricity has been mentioned, but as Apostoli first pointed out intra uterine galvanism is not well borne in these cases. Fine wire faradism is very soothing in conjunction with iodine and boroglyceride tampons. I agree with the reader of the paper when he says that cases of gonorrhœal salpingitis are not good cases for conservative gynecology. It is better to leave them alone than to take out one tube and ovary and to leave the other. I have been induced to do this in a dozen cases against my judgment, and they have proved very unsatisfactory to all concerned. I have also had to do a second operation for removal of the remaining ovary in about ten cases where it was left in at the first operation by the operators.

A. E. GARROW, M.D. Only recently in a case which I had under observation, where it was well known that a chronic infection of the pelvis from this condition existed, there was also associated an acute appendix inflammation. In discussing the condition with Dr. Chipman he expressed the opinion that the symptoms then present, and probably present on a previous attack two weeks before, were probably due to a recrudescence of the pelvic inflammation. I felt positive that the patient had acute appendicitis, and advised removal. Dr. Chipman took charge of the case, and the appendix, macroscopically at least, showed some little evidence of disease in addition to the other condition. On more than one occasion I have operated in acute appendicitis with pus formation, a catarrhal process and distended appendix; in which an examination of the appendages revealed undoubted gonorrhœal inflammation and that apparently the case had run a normal course afterwards. It is extremely interesting to know just how to exclude such cases in which the two conditions co-exist. It is true that an inspection of the lower mucous passages will assist very materially in confirming the diagnosis of gonorrhœal pelvic inflammation, nevertheless, in the presence of typical abdominal signs and symptoms one is justified in diagnosing appendicitis. Another point is the distribution of the infection from one side of the pelvis to the other. If (as I understood Dr. Chipman to say) infection be carried by the lymph stream through one Fallopian tube to the other and thence to the pelvis, why does the ordinary staphylococcus and streptococcus infections not spread as readily?

A third question was the type of inflammation most frequently met with in these cases, either in the acute recurrent attacks or in the chronic cases. It is evident that pus formation is not very common, that the pathological condition is evidently of the same type as we

find in other serous surface, namely, sere-fibrinous and fibrinous. If so, why is there any special danger in dealing with such cases provided drainage is superadded? Experience in general surgery is most satisfactory when such joints are early opened, particularly when they show evidence of a spreading infection to the surrounding structures. Nothing so quickly arrests the process as opening the joint on two sides, and draining it for two or three days. I have had several of these cases of very acute infection in the knee, which were promptly opened and drained, followed by exceedingly useful joints.

WESLEY MILLS, M.D. Dr. Chipman has not only made his subject clear and interesting, but has given such an example of choice English expressed with artistic ability, that we all owe a special debt of gratitude to him.

F. R. ENGLAND, M.D. I should like to emphasize the importance of the differential diagnosis in these cases; we have all experienced the difficulty in differentiating between acute gonorrhoeal pelvic peritonitis and peritonitis due to appendicitis. A case was recently admitted to the Western Hospital under my care, as a case of acute appendicitis demanding immediate operation. The patient had been ill four days, all the symptoms were very pronounced, temperature high, prolonged and distressing vomiting, rigidity of the abdomen, and yet there was something about the general appearance of the patient which caused me to doubt the diagnosis; she did not seem ill enough considering the severity of the symptoms for a case of appendicitis of four days duration, and the possibility of a gonorrhoeal peritonitis was entertained. Cultures taken were negative but the clinical history was suspicious and I was satisfied that the case was one of gonorrhoeal peritonitis. All the symptoms subsided in a few days without operation, and the patient was soon convalescent. We all know that such cases are frequently operated upon. I have myself operated in at least two such cases, recovery followed in both cases, and possibly the condition may have been somewhat benefited by the operation. In these early cases of gonorrhoeal infection I think one would hardly expect to find free pus in the peritoneal cavity. In old pus tube cases there is probably generally present a mixed infection where pyogenic organisms are present as well as the gonococcus. I would like to ask Dr. Chipman whether primary tuberculous salpingitis is commonly met with and if it is thought to be a frequent cause of general tuberculous peritonitis.

The fifth regular meeting of the Society was held Friday evening, December 1st, 1905, Dr. F. R. England in the Chair.

PYLORECTOMY FOR GASTRIC CANCER.

W. G. REILLY, M.D., F. R. ENGLAND, M.D., and JOHN McCRAE, M.D., showed a living case on whom this operation had been performed successfully.

F. J. SHEPHERD, M.D. I should like to ask what was the condition of the glands in connexion with the stomach, and if they were examined microscopically.

JAMES BELL, M.D. I think Dr. England is to be congratulated on the success of this operation. Those who do many pylorectomies have many failures. What strikes me about this case is the long period in which the symptoms were present, viz.: three years. It seems to me hardly possible that cancer should have been present all that time. Rather there seems to have been a period of dyspepsia, then probably gastric ulcer and cicatricial pyloric stenosis before any malignant condition developed.

F. R. ENGLAND, M.D. With regard to the glands which were palpable, they were removed and set aside for examination. Both the greater omentum and lesser omentum were carefully examined and all glands that were palpable were removed; they were not large, not larger than butter beans. Unfortunately, no examination seems to have been made of the glands removed. I would like to have had some discussion on the experience of others in placing a wick of gauze behind the site of anastomosis. I was led, by this case, to believe that it was not good practice and, that it favoured leakage; there certainly was some in this case. The Murphy button did not seem to me very satisfactory either, and in another case, if the patient's condition allowed, I should prefer to rely entirely upon suturing.

ANATOMICAL SPECIMENS.

J. A. HENDERSON, M.D., presented two specimens, one of Horseshoe kidney, the other showing an unusual situation of the internal maxillary artery. He gave the following account:

My first specimen is a horseshoe kidney taken from subject number two of the McGill dissecting room series for this session, the subject being a man apparently thirty-five years old. It is a specimen in which the bond of union between the two sides is of large size and made of renal substance.

In situation the kidney was lower than usual, the upper extremity on the left side being two inches, and the right side three inches too low. The lowest point is in the connecting lobe and is situated about one inch below the bifurcation of the aorta.

Shape.—Viewed anteriorly the kidney seems to consist of three lobes or masses. First, on the left is a mass very similar in size to the normal left kidney, but rather drawn out inferiorly, and with the hilum in front. Second, on the right is a mass rather smaller than the normal kidney, less regular in shape and also with the hilum in front. Third, there is an irregularly quadrilateral and partially lobulated mass, three inches long by one and three-quarter inches wide and three-quarters of an inch thick, uniting the lower poles of the lateral masses, and passing in front of the aorta and inferior vena cava. At first sight anteriorly there would appear to be three separate kidneys, but that is due to the hilum on each side concealing the connecting bridge of kidney substance. Viewed posteriorly it presents one mass with a very distinct crescentic or horseshoe shape.

Vessels.—In cases of horseshoe kidney the vascular supply is usually abundant, and this one is no exception to the rule. There are eight arteries present in this specimen, three pairs from the aorta, and two others arising lower down. The highest pair may be considered to be the normal renal arteries. They are about the usual size, long, and pass obliquely downward and outward to reach the masses on each side, subdividing before entering the renal substance. The second pair, about half the size of the first, arise together from the front of the aorta, half an inch below the inferior mesenteric, and curve outward and downward, to the central mass, where each enters the lower and inner part of the hilum. The third pair, smaller than the second, arise from the sides of the aorta, one inch above its bifurcation, under cover of the connecting lobe. Each passes outward to a notch on the lower border of each side situated at the junction of the connecting lobe with the lateral mass and at this notch enters the lowest part of the corresponding hilum. Of the two remaining arteries one arises from the right common iliac, and runs to the right portion of the central mass, while the other arises from the middle sacral artery and enters the lower border in the median line.

The veins are five in number. Two of large size from the right hilum, and one of large size from the left hilum enter the inferior vena cava, while two small veins from the lower border enter the left common iliac.

Hilum.—A separate hilum is present on each side, beginning in the lateral mass, running downward and inward and terminating in a notch at the lower border. It is placed in front of the kidney, and in each there are two ureteral pelves, one from the lateral, one from the central mass. These after diminishing in size unite to form a single ureter.

The second specimen I have to show this evening is more of special anatomical than of general practical interest, so the note is a brief one.

The internal maxillary artery, the larger of the two terminal branches of the external carotid, passes under cover of the neck of the lower jaw, and usually upon the surface of the external pterygoid muscle. Not infrequently, in about $4\frac{1}{2}$ per cent. of cases, according to Dr. Shepherd, *Ref. Handbook of Med. Sciences*, it passes under cover of the external pterygoid muscle, between that muscle and the branches of the inferior maxillary division of the fifth nerve.

In this specimen the internal maxillary artery passes very deeply behind the third division of the third nerve and behind the foramen ovale, resting upon the chorda tympani nerve at its exit from the skull, and upon the base of the external pterygoid plate. The middle meningeal artery therefore has a very short course, about one-quarter of an inch, before reaching the foramen spinosum, and the auriculo-temporal nerve passes entirely in front of it.

On the other side of the head the internal maxillary artery was also under cover of the inferior maxillary division of the fifth nerve.

My excuse for showing this specimen is that, so far as I am aware, such a position of the artery has not hitherto been recorded.

F. J. SHEPHERD, M.D. Kidneys now are cut down upon and removed so often that when we get down upon such an one as this it is rather interesting, more especially as nearly all these kidneys have an abnormal supply of blood vessels, both in number and position, and this is a practical point which the operator should know. Another important point is that in all these anomalous kidneys you have an anterior position of the hilum. The second specimen is interesting from an anatomical standpoint only. As to the frequency of Horseshoe kidney I have seen about a dozen cases only in the dissecting room since 1875.

PULMONARY EMBOLISM.

A. E. GARROW, M.D., read a case report of pulmonary embolism following removal of stone from ureter.

F. G. FINLEY, M.D. The thrombi in the majority of these cases it seems to me has no connexion with operation; in this case it is more than probable that the patient would have died of embolism, apart from operation. I remember a patient who died of this condition after an operation and it was found that the embolus had come from the right side of the heart, which was dilated and fatty. The clot had formed in one of the auricles, and had been carried off and lodged in the lung.

F. R. ENGLAND, M.D. A year ago I saw a case of thrombosis following operation for removal of the kidney. Fortunately the patient recovered, and no pulmonary embolism occurred; but there was a thrombosis with great oedema of the right leg coming on 10 or 12 days after nephrectomy; the man was in a very weak condition but was not septic.

HYDATID DISEASE.

C. K. P. HENRY, M.D., read a paper upon hydatid disease. Dr. Henry also presented the patient who had been operated on for this condition, and had now returned with further cysts.

W. F. HAMILTON, M.D. I should like to ask if there was any microscopical examination made of this fluid: as, in most of these cases, such an examination would place the diagnosis beyond doubt.

F. J. SHEPHERD, M.D. Of the three cases mentioned two were only discovered by the pathologist at the post-mortem. In the third, Dr. MacKenzie made a diagnosis of echinococcus cyst which was confirmed at operation. In this case I do not think any trouble has occurred since operation. Another case, I think, occurred at the hospital under either Dr. Ross or Dr. Osler, of an echinococcus cyst of the brain, which was found post-mortem.

J. A. HUTCHISON, M.D. I would like to express my appreciation of the work Dr. Henry has given to this report, and to ask if he is aware of the fact that in the Winnipeg Hospital a number of such cases may be seen from the Icelandic colony in the Northwest.

RIDLEY MACKENZIE, M.D. Not long ago I saw the patient Dr. Shepherd spoke of; he was apparently in excellent health and there had been no return of the condition.

F. R. ENGLAND, M.D. What Dr. Hutchison says is quite true, it is not such a rare condition in the Northwest among the Icelandic people: Dr. Chown, of Winnipeg, a few years ago reported a number of these cases before the Canadian Medical Association.

C. K. P. HENRY, M.D. The patient reports that he has lived in Montreal ever since he came to Canada 16 years ago. As to the disease in the Northwest, Dr. Elder has written for information with regard to its incidence. In regard to the case of echinococcus cyst of the brain which Dr. Shepherd refers to, I have looked up the records but failed to find it. As to a diagnosis from the fluid obtained, I know that Dr. MacKenzie in his case also examined the fluid, and particularly looked for the hooklets, but there was nothing found characteristic of the condition to make diagnosis positive.

PERICARDITIS, WITH AN ANALYSIS OF 30 CASES.

W. F. HAMILTON, M.D., read a paper upon Pericarditis, with an analysis of 30 cases.

F. G. FINLEY, M.D. I have been very much interested in Dr. Hamilton's results, and his experience is to some extent similar to my own. First of all, with regard to Ewart's dulness at the base of the left lung, I have failed to find it to any extent, without, as a general rule, something to account for it. A small quantity of fluid is very common indeed. I have at present a patient who has fluid on both sides, and considerable dulness, and on several occasions I have found the dulness due to fluid and not due to the explanation Dr. Ewart gives for it. I have also occasionally found much difficulty in distinguishing between pericardial effusion and cardiac dilatation. In a case I saw with Dr. MacKenzie of this nature we were both undecided as to whether we were dealing with a dilated heart or pericardial effusion. Under these circumstances it is safer to have a surgeon make an incision rather than run the risk of inserting the needle blindly into the heart. In the case I referred to Dr. Armstrong made an incision and found plastic pericarditis but absolutely no fluid, and in future cases I think I should be inclined to follow the same practice, when there is any reasonable doubt.

RIDLEY MACKENZIE, M.D. I can only speak of the treatment, and would say that I would never suggest, or even coincide, with aspirating the pericardium in such cases. I have listened to descriptions of the ease with which it can be done, but I have doubted it very much. A much safer way is resection of the rib, which acts as well, and with very much less danger.

HAMILTON MEDICAL SOCIETY.

The regular monthly meeting of this Society was held January 3rd, 1906, in the Hotel Royal, the President, Dr. Ingersoll Olmsted, occupying the chair.

The programme was as follows:—

I. Round Ulcer of Duodenum, by Dr. J. Albert Dickson. Notes of three cases were read. In the discussion which followed, attention was called to these points:—That of the three cases cited, one was syphilitic, one tubercular, and the third alcoholic, with cirrhotic liver and kidneys, and that accurate diagnosis of the condition is difficult or impossible before the occurrence of perforation or hæmorrhage.

II. Compound Fracture of Skull, by Dr. L. W. Cockburn. A case was presented with history, where the patient, as a result of an accident, had a flap of bone and scalp removed from his head, and turned down over the forehead,—in very much the same way as a surgeon would do, prior to an operation on the dura mater or brain. Both bone and scalp were replaced, and the wound drained. Patient made a perfect recovery.

Dr. Cockburn also showed a patient who illustrated in a striking manner the value of conservatism in surgery. The man had suffered a crushing of the right hand so that the member was practically disorganized. Instead of amputation at the wrist, the usual procedure in such cases, the hand was cleaned, as thoroughly as possible, and dressed. As a final result the patient showed, instead of a stump, a comparatively useful though deformed hand.

III. Microscopical Specimens, by Dr. J. Albert Bauer. Stained sections were shown of a number of interesting pathological specimens.

IV. Gross Pathological Specimens, with reports of the cases were presented by Drs. Olmsted and Mullin.

Mr. Croft, well known to many Canadians as one of the surgeons on the staff of St. Thomas' Hospital, London, England, died, November 21st, aged 72.

Dr. Jukes, formerly of St. Catharines, for some time Surgeon, North-West Mounted Police, and lately a resident of Wellington, B.C., died in Vancouver December 6th. He became a licentiate of the Medical Board in 1849, and received the degree of M.B. from Trinity University in 1865.

Messrs. Baillière, Tindall & Cox, of 8 Henrietta Street, Covent Garden, London, announce that, after January 1st, 1906, Messrs. J. A. Carveth & Co., of Toronto, will have the entire agency for their books in Canada. This will make it possible for medical men to get any of those books which they may require within a few days through any bookseller in Canada.

THE DISCOVERER OF THE PHAGOCYTE.

The mention of the fact that the body in sickness is a battlefield where invaders and defenders "fight to a finish," recalls the man who discovered our powerful ally, the phagocyte, and the mechanism of its protective action. It may not be amiss to give some details of the life of Elie Metchnikoff, to whom just two and a half wholly unilluminating lines are devoted in *Who's Who*. The authenticity of the account is guaranteed by the fact that it comes from the great scientist himself. He was born in 1845 at Livanopka, in the Kharkoff Government, amid the steppes of Southern Russia. His father was an officer of the Imperial Guard, who bred horses for the Russian Cavalry at Livanovka. His mother was a Polish Jewess. Metchnikoff describes himself as a mongrel, having in him more Hebrew blood than Slav. The bent of his mind towards natural science was revealed to him at the age of eight, when a medical student with a taste for botany came to prepare his elder brother for a public school. At the age of eleven Metchnikoff entered the Kharkoff *lycée*, where he remained seven years. He then entered the University of the same town, and in due course obtained the degree of Licentiate, corresponding to our Bachelor of Arts. Afterwards he studied at Giessen under Leuckhart, celebrated as an authority on intestinal worms; at Göttingen, under the famous anatomist Henle, and at Munich under Siebold. It is worthy of note that Metchnikoff never took a degree in medicine; professional pedants might therefore justly taunt him, as they taunted Pasteur, with the fact that he is an "unqualified man." Almost from the first he gave himself up to zoology and anatomy. His researches on the lower animals led him to Italy, where he worked at the Naples Marine Station and elsewhere. For twelve years he was professor at Odessa; he resigned his chair in 1882 on account of the intolerable situation created by the murder of Alexander the Second, the perpetrator of which had been a student in that University. Metchnikoff, who has always held aloof from politics, returned to Italy, settling at Messina. There he studied comparative embryology and there too he discovered the phagocyte. In 1886 he returned to Russia and was appointed director of a bacteriological station at Odessa. As the country round about swarmed with mad dogs and wolves, he soon found that the number of patients requiring treatment left him no time to pursue his researches. He therefore gave up his post, and, turning his back finally on Russia, wandered about Europe for a time, finally settling in Paris. The Pasteur Institute was then in course of erection, and Metchnikoff offered his services to Pas-

teur, who at once placed a laboratory at his disposal. There he has remained for 17 years. He has had brilliant offers from Russia and America, but has steadfastly refused to leave Paris. He says: "I like the Institute and have numerous pupils. What more can I wish for?" His life, simple and strenuous, has been one of single-minded devotion to the search for truth.—*The Practitioner*, December, 1905.

THE BEHRING INCIDENT.

The question of congress organization recalls the Behring incident, which was so much discussed by the newspapers as well as by the medical profession. What purports to be the "true story" was published not long ago in the *Gaulois*. In that account the responsibility for the sensation is placed on the shoulders of a journalist who met Professor Behring at dinner during the Congress. The Professor, it is said, does not speak much French, and his statement that he had found a cure for *bovine* tuberculosis was misconstrued into an assertion that he had discovered a cure for consumption. We are asked to believe that in this way an enterprising Paris newspaper was misled into publishing a statement, which was not merely premature, but positively false. This explanation may possibly be true, but we regret to say that we cannot believe it to be the whole truth. It is likely enough, however, that Professor Behring's hand was forced. It would seem that he was unwittingly made to play the part of a muzzler to Dr. Marmoreck, to whom, for some reason, the authorities of the Congress were unwilling to grant a hearing. It is certain that the manner in which Professor Behring was put forward was, to say the least of it, unusual. The General Secretary announced in a loud voice at one of the public sittings, where no discussion was possible, that "By order of the President, Professor Behring was to be allowed to make a communication, etc." It is pretty clear that a sensation was deliberately engineered by some one. The profession has grown tired of the frequent announcement of discoveries by well-known scientists; it has been taken in so often that it has also become suspicious. It is a pity that both advertising discoverers and sensational journalists cannot be made amenable to punishment for the publication of false news. The amount of suffering which such exaggerating statements cause is past all computation, and there should be some legal provision to protect the public from what is a particularly cruel form of deception.—*The Practitioner*, December, 1905.

The following percentages of alcohol in the "patent medicines" named are given by the Massachusetts State Board Analyst in the published document No. 34:

Lydia Pinkham's Vegetable Compound, 20.6; Paine's Celery Compound, 21; Dr. Williams's Vegetable Jaundice Bitters, 18.5; Whiskol, "a non-intoxicating stimulant," 28.2; Colden's Liquid Beef Tonic, "recommended for treatment of alcohol habit," 26.5; Ayer's Sarsaparilla, 26.2; Thayer's Compound Extract of Sarsaparilla, 21.5; Hood's Sarsaparilla, 18.8; Allen's Sarsaparilla, 13.5; Dana's Sarsaparilla, 13.5; Brown's Sarsaparilla, 13.5; Peruna, 28.5; Vinol, Wine of Cod Liver Oil, 18.8; Dr. Peters's Kuriko, 14; Carter's Physical Extract, 22; Hocker's Wigwam Tonic, 20.7; Hoofland's German Tonic, 29.3; Howe's Arabian Tonic, "not a rum drink," 13.2; Jackson's Golden Seal Tonic, 19.6; Mensman's Peptonized Beef Tonic, 16.5; Parker's Tonic, "purely vegetable," 41.6; Schneck's Seaweed Tonic, "entirely harmless," 19.5; Baxter's Mandrake Bitters, 16.5; Boker's Stomach Bitters, 42.6; Burdock Blood Bitters, 25.2; Greene's Nervura, 17.2; Hartshorn's Bitters, 22.2; Hoofland's German Bitters, "entirely vegetable," 25.6; Hop Bitters, 12; Hostetter's Stomach Bitters, 44.3; Kaufman's Sulphur Bitters, "contains no alcohol" (as a matter of fact it contains 20.5 per cent. of alcohol, and no sulphur), 20.5; Puritana, 22; Richardson's Concentrated Sherry Wine Bitters, 47.5; Warner's Safe Tonic Bitters, 35.7; Warren's Bilious Bitters, 21.5; Faith Whitcomb's Nerve Bitters, 20.3.

The present number of the JOURNAL has been delayed on account of difficulties which occurred with the mechanical staff of the printing house. The trouble has been arranged, and the indulgence of readers is asked for the delay.

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No. 2.

PERIODIC VARIATIONS IN NORMAL URINE.

BY

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Innumerable analyses of urine have shown that even what may be considered normal samples exhibit considerable differences in composition. The purpose of the experiments here reported was to ascertain whether under ordinary conditions the urine of a single individual shows wide fluctuations in composition within short periods of time, and whether any regularities in these fluctuations could be established.

The experiments were made on urine from one of the writers, a student of twenty-three years, five feet ten inches in height, and weighing one hundred and forty pounds, of sedentary habits, and in fair general health. During the period of experiment, which extended almost continuously from March 8th to April 26th, some slight fever was experienced at times, apparently malarial, but otherwise the health conditions were quite normal.

OUTLINE OF THE EXPERIMENTS.

The experimental work included the determination for known time intervals of the volume excreted, the reaction with litmus paper, the color, the specific gravity, the percentage of urea. From these data there were calculated the volume per hour, the total solids per hour, the urea per hour, and the solids other than urea per hour.

In the following pages the word "excretion" means the entrance of the urine into the bladder; the urine was passed as completely as possible at the beginning and at the end of each period of excretion, and in many cases at other times during the period.

No attempt was made to control the diet, which was of a normal mixed character throughout, three meals being taken at about 7.30 a.m., 12 m. and 5.30 p.m., respectively, and no food at other times during the experiments in Series IV.

The experiments may be grouped in four series, each series covering completely, or nearly so, several consecutive days, except as stated below:—

Series I. Forty-four irregular periods, nearly consecutive, during 17 out of 19 consecutive days.

Series II. Thirty-two six-hour periods, consecutive except at one point, during ten consecutive days.

Series III. Thirty-seven consecutive four-hour periods during seven days.

Series IV. Thirty-six periods, consecutive except at one point, during seven out of eight consecutive days; the periods were so arranged as to cover especially the three hours immediately following each meal, with a view to learning the effect, if any, of gastric digestion.

EXPERIMENTAL METHODS AND CALCULATIONS.

The *volume* in cubic centimeters (c.c.) was measured with graduated cylinders, the *reaction* determined with sensitive litmus paper, the *color* recorded by comparison with Vogel's scale of urine tints as given in James Tyson's "Practical Examination of Urine" (pale yellow, light yellow, yellow, reddish yellow, yellowish red, red, brownish red, reddish brown, brownish black); the *specific gravity* was determined with a Vogel's urinometer, or hydrometer, at room temperature, corrections being made for variations from 15.5° centigrade by adding or subtracting .001 to or from the observed figure for every 3 degrees above or below the standard temperature; the *urea per cent.* was determined with a Doremus' ureometer, the urine being introduced into an alkaline sodium hypobromite solution and the grains of urea in 1 c.c. urine read on the graduations according to the volume occupied by the evolved nitrogen gas, and the reading multiplied by 100.

Certain other figures were calculated from these data, as follows:—The *volume per hour* in cubic centimeters was estimated by dividing the volume of the sample analysed by the number of hours elapsed during its excretion; the *solids per hour* in grams by multiplying the gravity above 1000 (water being taken as 1000) by Haser's coefficient, 2.33, dividing by 1,000 to obtain grams of solids per cubic centimeter, and multiplying the result by the volume per hour; the *urea per hour* in grams was estimated by multiplying the urea per cent by the volume per hour and dividing by 100; the *solids not urea per hour* in grams by subtracting the urea per hour from the solids per hour.

With regard to the accuracy and significance of the analytical results, it may be said briefly that methods commonly used in diagnosis were

purposely employed. The figures representing "solids," "urea," and "solids not urea," are necessarily not very exact, from the nature of the methods employed; different chemists have chosen various factors to apply to the gravity in the calculations of the solids, and it is known that the nitrogen evolved by sodium hypobromite is not all of that present in the urea and includes some from uric acid and creatinin; in spite of these absolute inaccuracies, however, the relative figures may be considered to fairly represent the variations in the constituents.

EXPERIMENTAL RESULTS.

The results obtained are presented in the following tables, each series being discussed separately.

Series I.

Forty-four irregular periods, nearly consecutive, during 17 out of 19 consecutive days.

- A Date of excretion.
- B End of period of excretion.
- C Length of period of excretion (hours).
- D Volume per hour (c.c.)
- E Reaction.
- F Color.
- G Gravity above 1000.
- H Solids per hour (grams).
- I Urea per cent.
- J Urea per hour (grams).
- K Solids not urea per hour (grams).

A	B	C	D	E	F	G	I	I	J	K
Mar. 8, 9	7 A.	12	41.7	Acid	Yel.-red	22	2.14	1.40	0.58	1.56
" 9, 10	6.30 A.	12	34.3	Acid	Red-yel.	23	1.84	1.45	0.50	1.34
" 10	6.30 P.	12	27.1	Neut.	Red-yel.	25	1.58	1.60	0.43	1.15
" 10, 11	6.30 A.	12	27.9	Acid	Red-yel.	27	1.74	2.10	0.59	1.15
" 11	7 P.	12	25.4	Acid	Red-yel.	27	1.60	2.20	0.56	1.04
" 11, 12	7 A.	12	31.7	Acid	Yel.-red	25	1.85	1.75	0.55	1.30
" 12	7 P.	12	28.7	Acid	Yel.-red	27	1.81	1.50	0.43	1.38
" 12, 13	7 A.	12	26.7	Acid	Yel.-red	30	1.87	2.30	0.61	1.26
" 13	1 P.	6	53.3	Alk.	Red-yel.	18	1.30	1.30	0.69	0.61
" 13	7 P.	6	30.8	Acid	Yel.-red	16	1.56	1.20	0.37	1.19
" 13, 14	7 A.	12	35.4	Acid	Yel.-red	21	1.73	1.65	0.58	1.15
" 14	1 P.	6	36.7	Alk.	Red-yel.	22	1.88	1.50	0.55	1.33
" 14	7 P.	6	41.7	Acid	Yel.-red	27	2.62	1.85	0.77	1.85
" 14, 15	7 A.	12	26.2	Acid	Yel.-red	24	1.47	2.20	0.58	0.89
" 15	7 P.	12	32.5	Acid	Yel.-red	29	2.20	2.35	0.77	1.43
" 15, 16	7 A.	12	29.2	Neut.	Red-yel.	23	1.56	2.20	1.01	0.55
" 16	1 P.	6	49.2	Neut.	Yel.-red	23	2.64	1.85	0.91	1.73

A	B	C	D	E	F	G	H	I	J	K
Mar. 16	7 P.	6	26.7	Acid	Yel.-red	32	1.92	3.00	0.80	1.12
" 16, 17	7 A.	12	40.8	Acid	Yel.	21	2.08	2.45	1.00	1.08
" 17	1 P.	6	30.0	Acid	Red-yel.	23	1.61	2.10	0.63	0.98
" 17	7 P.	6	32.5	Acid	Yel.-red	26	1.97	2.50	0.81	1.16
" 17, 18	7 A.	12	39.2	Acid	Red-yel.	20	1.83	2.20	0.86	0.97
" 18	1 P.	6	43.3	Neut.	Red-yel.	21	2.02	2.10	0.91	1.11
" 21	9 P.	4	20.0	Acid	Yel.-red	30	1.39	3.15	0.63	0.76
" 22	12 M.	3	35.0	Acid	Red-yel.	26	2.12	2.50	0.87	1.25
" 22	6 A.	6	40.0	Acid	Red-yel.	20	1.86	2.10	0.84	1.02
" 22	10 A.	4	47.5	Neut.	Red-yel.	19	2.10	1.40	0.66	1.44
" 22	4 P.	4	31.2	Acid	Red-yel.	26	1.90	2.70	0.84	1.06
" 22	9 P.	5	29.0	Acid	Red-yel.	27	1.82	3.15	0.91	0.91
" 22, 23	5 A.	8	28.7	Acid	Yel.-red	24	1.61	3.10	0.89	0.72
" 23	11 A.	4	45.0	Neut.	Yel.-red	23	2.41	2.00	0.90	1.51
" 23	5 P.	4	32.5	Acid	Yel.-red	27	2.05	2.40	0.78	1.27
" 23	10 P.	4	30.0	Acid	Red-yel.	29	2.03	3.00	0.90	1.13
" 23, 24	4 A.	6	36.7	Acid	Red-yel.	23	1.96	2.95	1.08	0.88
" 24	8 A.	4	46.2	Neut.	Red-yel.	21	2.26	2.10	0.97	1.29
" 24	1 P.	5	35.0	Neut.	Yel.-red	22	1.79	2.20	0.77	1.02
" 24	5 P.	4	26.2	Acid	Red-yel.	26	1.59	3.00	0.79	0.80
" 24	9 P.	4	28.7	Acid	Yel.-red	30	2.01	3.10	0.89	1.12
" 24, 25	3 A.	6	31.7	Acid	Red-yel.	24	1.77	2.70	0.86	0.91
" 25	7 A.	4	30.0	Acid	Yel.-red	24	1.71	2.40	0.72	0.99
" 25	11 A.	4	38.7	Neut.	Yel.-red	24	2.20	1.90	0.74	1.46
" 25	10 P.	4	28.7	Acid	Yel.-red	29	1.94	2.85	0.82	1.12
" 25, 26	4 A.	6	48.3	Neut.	Red-yel.	20	2.25	2.25	1.09	1.16
" 26	8 A.	4	75.0	Neut.	Yel.	14	2.45	1.20	0.90	1.55

Inspection of the results in Series I. shows the following:—

a. The volume per hour varied from 20.0 to 75.0 with an average of 35.3 c.c., or 847 c.c. in 24 hours. Considering the day to consist of four six-hour periods—night from just before midnight till just before 6 a.m., forenoon from 6 a.m. till noon, afternoon from noon till 6 p.m., and evening from 6 p.m. till midnight—and for each sample examined taking the middle of its period of excretion, the average for the night was 34.3, the forenoon 44.6, the afternoon 30.5, the evening 27.3 c.c.

b. The reaction was acid in 31, neutral in 11, and alkaline in 2 samples. Of the 13 samples not showing acidity all but 2 were forenoon excretions.

c. The color was yellow in 2, reddish yellow in 21, and yellowish red in 21 samples. As might be expected, the color was usually darker when the gravity was higher, both depending in the main on concentration, the average gravity for yellow samples being 1017, for reddish yellow 1023, and for yellowish red 1025.

d. The gravity varied from 1014 to 1032, with an average of 1024. The average for the night was 1023, the forenoon 1021, the afternoon 1026, the evening 1029.

e. The solids per hour varied from 1.30 to 2.64, with an average of 1.91 grams, or 46 grams in 24 hours. The average for the night was 1.83, the forenoon 2.07, the afternoon 1.90, the evening 1.84 grams.

f. The urea per cent. varied from 1.20 to 3.15, with an average of 2.20 per cent.

g. The urea per hour varied from 0.37 to 1.09, with an average of 0.76 grams, or 18.24 grams in 24 hours. The average for the night was 0.77, the forenoon 0.79, the afternoon 0.67, the evening 0.83 grams per hour.

h. The solids not urea per hour varied from 0.55 to 1.85, with an average of 1.15 grams, or 27.6 grams in 24 hours. The average for the night was 1.06, the forenoon 1.27, the afternoon 1.22, the evening 1.01.

It will be noted that the forenoon period in this series was exceptional in showing the greatest volume per hour, the least acidity, the lowest gravity, the maximum solids per hour, and the maximum solids not urea per hour. The lowest gravity and yet maximum solids indicates an exceptional excretion of water for this period, perhaps due to personal habit in ingesting considerable water early in the forenoon, with a consequent more thorough washing out of the system—not marked, however, in the case of urea. It is possible that this represents the product of the resting period immediately preceding.

Series II.

Thirty-two six-hour periods, consecutive except at one point, during 10 consecutive days.

A	B	C	D	E	F	G	H	I	J	K
Mar. 28	6.30 P.	6	30.0	Acid	Yel.-red	27	2.05	2.80	0.84	1.21
" 28, 29	12.30 A.	6	47.5	Acid	Yel.-red	22	2.44	2.60	1.23	1.21
" 29	6.30 A.	6	24.2	Acid	Yel.-red	26	2.19	3.15	0.76	1.43
" 29	12.30 P.	6	31.7	Acid	Yel.-red	24	1.77	2.50	0.79	0.98
" 29	6.30 P.	6	35.8	Acid	Yel.-red	25	2.08	2.30	0.82	1.26
" 29, 30	12.30 A.	6	63.3	Acid	Red-yel.	19	2.80	1.90	1.20	1.60
" 30	6.30 A.	6	62.5	Acid	Red-yel.	16	2.33	1.30	0.81	1.52
" 30	12.30 P.	6	50.8	Neut.	Yel.-red	22	2.60	1.45	0.74	1.86
" 31	6.30 P.	6	30.8	Acid	Red	25	1.80	2.40	0.74	1.06
" 31,										
Apr. 1	12.30 A.	6	25.0	Acid	Yel.-red	28	1.63	2.60	0.65	0.98
" 1	6.30 A.	6	64.2	Acid	Red-yel.	17	2.54	1.40	0.90	1.64
" 1	12.30 P.	6	66.7	Neut.	Yel.	18	2.80	1.20	0.80	2.00
" 1	6.30 P.	6	32.5	Acid	Yel.-red	25	1.89	1.50	0.49	1.40
" 1, 2	12.30 A.	6	25.8	Acid	Yel.-red	28	1.68	2.80	0.72	0.96

A	B	C	D	E	F	G	H	I	J	K
" 2	6.30 A.	6	38.3	Acid	Red-yel.	23	2.05	2.00	0.77	1.28
" 2	12.30 P.	6	37.5	Acid	Yel.-red	21	2.08	1.70	0.64	1.44
" 2	6.30 P.	6	27.5	Acid	Yel.-red	28	1.79	2.30	0.63	1.16
" 2, 3	12.30 A.	6	26.7	Acid	Red-yel.	30	1.86	2.70	0.72	1.14
" 3	6.30 A.	6	25.8	Acid	Yel.-red	25	1.50	2.20	0.57	0.93
" 3	12.30 P.	6	58.3	Neut.	Yel.	19	2.58	1.45	0.85	1.73
" 3	6.30 P.	6	25.8	Acid	Red-yel.	29	1.74	2.50	0.65	1.09
" 3, 4	12.30 A.	6	30.8	Acid	Yel.-red	27	1.94	2.20	0.68	1.26
" 4	6.30 A.	6	26.7	Acid	Yel.-red	29	1.80	2.70	0.72	1.08
" 4	12.30 P.	6	25.0	Neut.	Yel.-red	28	1.63	2.40	0.60	1.03
" 4	6.30 P.	6	36.7	Neut.	Red-yel.	26	2.22	2.50	0.92	1.30
" 4, 5	12.30 A.	6	32.5	Acid	Red-yel.	27	2.04	2.70	0.88	1.16
" 5	6.30 A.	6	30.0	Acid	Yel.-red	26	1.82	2.40	0.72	1.10
" 5	12.30 P.	6	53.3	Alk.	Red-yel.	22	2.73	1.60	0.85	1.88
" 5	6.30 P.	6	40.0	Acid	Yel.	25	2.33	2.00	0.80	1.53
" 5, 6	12.30 A.	6	27.5	Acid	Yel.-red	24	1.54	2.30	0.63	0.91
" 6	6.30 A.	6	52.5	Acid	Yel.	16	1.96	1.40	0.73	1.23
" 6	12.30 P.	6	58.3	Neut.	Yel.	18	2.45	1.30	0.76	1.69

Inspection of the results in Series II. shows the following:—

a. The volume per hour varied from 24.2 to 66.7, with an average of 38.6 c.c., or 926 c.c. in 24 hours. The average for the night was 40.5, the forenoon 47.7, the afternoon 32.4, the evening 34.9 c.c.

b. The reaction was acid in 25, neutral in 6, and alkaline in 1 sample. Of the seven samples not showing acidity all but one, were forenoon excretions.

c. The color was yellow in 5, reddish brown in 9, yellowish red in 17, red in 1 sample. The color was again dependent on concentration, the average gravity of yellow samples being 1019, of reddish yellow 1023, of yellowish red 1026; the single red sample had a gravity of 1025.

d. The gravity varied from 1016 to 1030, with an average of 1024; the average for night samples was 1022, forenoon 1021, afternoon 1026, and evening 1026.

e. The solids per hour varied from 1.50 to 2.80, with an average of 2.08 grams, or 49.9 grams in 24 hours; the average of night samples was 2.02, forenoon 2.33, afternoon 1.99, evening 1.99 grams.

f. The urea per cent. varied from 1.20 to 3.15, with an average of 2.13 per cent.

g. The urea per hour varied from 0.49 to 1.23 with an average of 0.77 grams, or 18.5 grams in 24 hours; the average of night samples was 0.75, forenoon 0.75, afternoon 0.74, evening 0.84 grams.

h. The solids not urea per hour varied from 0.91 to 2.00, with an average of 1.31 grams, or 31.4 grams in 24 hours; the average for night samples was 1.27, forenoon 1.58, afternoon 1.25, evening 1.15 grams.

In this series, also, the forenoon period is exceptional in showing the maximum volume per hour, least acidity, maximum solids per hour, maximum solids not urea per hour—not, however, the maximum urea per hour.

Series III.

Thirty-seven consecutive four hour periods during seven days.

A	B	C	D	E	F	G	H	I	J	K
Apr. 7	10.30 P.	4	27.5	Acid	Red-yel.	30	1.92	3.00	0.82	1.10
" 7, 8	2.30 A.	4	28.7	Acid	Red-yel.	23	1.54	2.80	0.80	0.74
" 8	6.30 A.	4	30.0	Acid	Red-yel.	25	1.75	2.70	0.81	0.94
" 8	10.30 A.	4	36.2	Neut.	Yel.	26	2.19	2.60	0.94	1.25
" 8	2.30 P.	4	40.0	Acid	Red-yel.	24	2.23	1.90	0.76	1.47
" 8	6.30 P.	4	27.5	Acid	Red-yel.	27	1.73	2.40	0.66	1.07
" 8	10.30 P.	4	26.2	Acid	Red-yel.	30	1.83	3.00	0.79	1.04
" 8, 9	2.30 A.	4	41.2	Acid	Yel.	23	2.18	2.40	0.99	1.19
" 9	6.30 A.	4	36.2	Acid	Red-yel.	23	1.94	2.35	0.85	1.09
" 9	10.30 A.	4	27.5	Neut.	Red-yel.	24	1.54	2.30	0.63	0.91
" 9	2.30 P.	4	38.7	Neut.	Yel.	26	2.34	2.20	0.85	1.49
" 9	6.30 P.	4	35.0	Acid	Red-yel.	28	2.28	2.80	0.98	1.30
" 9	10.30 P.	4	28.7	Acid	Red	31	2.08	3.40	1.23	0.85
" 9, 10	2.30 A.	4	41.2	Acid	Red-yel.	22	2.11	2.80	1.15	0.96
" 10	6.30 A.	4	53.7	Acid	Yel.	18	2.25	2.20	1.18	1.07
" 10	10.30 A.	4	42.5	Neut.	Yel.	23	2.28	2.30	0.98	1.30
" 10	2.30 P.	4	36.2	Acid	Red-yel.	24	2.03	2.40	0.87	1.16
" 10	6.30 P.	4	28.7	Acid	Red-yel.	26	1.74	2.50	0.72	1.02
" 10	10.30 P.	4	30.0	Acid	Yel.-red	27	1.89	2.50	0.75	1.14
" 10, 11	2.30 A.	4	28.7	Acid	Red-yel.	24	1.61	2.40	0.69	0.92
" 11	6.30 A.	4	33.7	Acid	Red-yel.	21	1.65	2.20	0.74	0.91
" 11	10.30 A.	4	27.5	Acid	Yel.-red	24	1.54	2.50	0.69	0.85
" 11	2.30 P.	4	25.0	Acid	Yel.-red	26	1.51	2.00	0.50	1.01
" 11	6.30 P.	4	32.5	Acid	Yel.-red	29	2.19	2.90	0.94	1.25
" 11	10.30 P.	4	27.5	Acid	Yel.-red	31	1.98	3.50	0.96	1.02
" 11, 12	2.30 A.	4	35.0	Acid	Yel.-red	25	2.04	3.10	1.08	0.96
" 12	6.30 A.	4	50.0	Neut.	Red-yel.	19	2.21	2.10	1.05	1.16
" 12	10.30 A.	4	47.5	Neut.	Red-yel.	22	2.42	2.00	0.95	1.47
" 12	2.30 P.	4	35.0	Acid	Red-yel.	24	1.96	2.30	0.80	1.16
" 12	6.30 P.	4	33.7	Acid	Yel.-red	28	2.20	2.60	0.88	1.32
" 12	10.30 P.	4	32.5	Acid	Red-yel.	28	2.12	3.30	1.32	0.80
" 12, 13	2.30 A.	4	78.7	Acid	Yel.	16	2.93	1.40	1.10	1.83
" 13	6.30 A.	4	90.0	Acid	Yel.	15	3.14	1.50	1.35	1.79
" 13	10.30 A.	4	81.2	Neut.	Yel.	16	3.03	1.20	0.97	2.06
" 13	2.30 P.	4	40.7	Acid	Red-yel.	23	2.18	2.30	0.94	1.24
" 13	6.30 P.	4	38.7	Acid	Red-yel.	25	2.27	2.80	1.08	1.19
" 13	10.30 P.	4	33.7	Acid	Red-yel.	26	2.04	3.20	1.08	0.96

Inspection of the results in Series III. shows the following:—

a. The volume per hour varied from 25.0 to 90.0, with an average of 38.5 c.c., or 924 c.c., in 24 hours. The averages for the different periods beginning with that ending at 2.30 a.m. were, in order, 42.2, 48.9, 43.7, 35.9, 32.7, 29.4, c.c.

b. The reaction was acid in 30 and neutral in 7 samples. Of the seven samples not showing acidity five were for the period ending at 10.30 a.m. and the other two for the periods just before and just after this, respectively.

c. The color was yellow in 8, reddish yellow in 21, yellowish red in 7, and red in 1 samples. The color was again dependent on concentration, the average gravity of yellow samples being 1020, of reddish yellow 1025, and of yellowish red 1027; the single red sample had a gravity of 1031.

d. The gravity varied from 1015 to 1031, with an average of 1025; the averages for the different periods beginning with that ending at 2.30 a.m. were, in order, 1022, 1020, 1022, 1024, 1027, 1029.

e. The solids per hour varied from 1.51 to 3.14, with an average of 2.08 grams, or 49.9 grams in 24 hours; the averages for the different periods beginning with that ending at 2.30 a.m. were, in order, 2.07, 2.16, 2.17, 2.04, 2.07, 1.98.

f. The urea per cent. varied from 1.20 to 3.50, with an average of 2.50 per cent.

g. The urea per hour varied from 0.50 to 1.35, with an average of 0.92 grams, or 22.1 grams in 24 hours; the averages for the different periods beginning with that ending at 2.30 a.m. were, in order, 0.97, 1.00, 0.86, 0.79, 0.88, 0.99 grams.

h. The solids not urea per hour varied from 0.73 to 2.05, with an average of 1.16 grams, or 27.8 grams in 24 hours; the averages for the different periods beginning with that ending at 2.30 a.m. were, in order, 1.10, 1.16, 1.31, 1.25, 1.19, 0.99 grams.

In this series also one or other of the forenoon periods—either that ending at 6.30 a.m. or that ending at 10.30 a.m.—shows the maximum volume per hour, the least acidity, lowest gravity, maximum solids per hour, (very slight) maximum urea per hour, maximum solids not urea per hour.

Series IV.

Thirty-six periods, consecutive except at one point, during seven out of eight consecutive days. The periods were so arranged as to cover especially the three hours immediately following each meal, with a

view to learning the effect, if any, of gastric digestion; the meal hours were 7.30 a.m., 12.30 p.m., and 5.30 p.m.

A	B	C	D	E	F	G	H	I	J	K
Apr. 18	10.30 A.	3	46.7	Neut.	Yel.	22	2.39	2.10	0.98	1.41
" 18	12.30 P.	2	47.5	Acid	Red-yel.	23	2.54	2.30	1.09	1.45
" 18	3.30 P.	3	45.0	Neut.	Red-yel.	26	2.72	2.20	0.99	1.73
" 18	5.30 P.	2	37.5	Acid	Yel.	28	2.44	2.70	1.01	1.43
" 18	8.30 P.	3	40.0	Acid	Yel.-red	31	2.89	3.00	1.20	1.69
" 18, 19	7.30 A.	11	31.8	Acid	Yel.-red	24	1.78	2.20	0.70	1.08
" 21	10.30 A.	3	40.0	Acid	Red-yel.	27	2.52	1.90	0.76	1.76
" 21	12.30 P.	2	50.0	Neut.	Yel.	24	2.79	1.80	0.90	1.89
" 21	3.30 P.	3	40.0	Acid	Red-yel.	26	2.42	2.30	0.92	1.50
" 21	5.30 P.	2	35.0	Neut.	Red-yel.	26	2.12	1.90	0.66	1.46
" 21	8.30 P.	3	43.3	Acid	Red-yel.	27	2.72	2.30	1.00	1.72
" 21, 22	7.30 A.	11	54.5	Acid	Red-yel.	20	2.54	1.70	0.93	1.61
" 22	10.30 A.	3	51.7	Neut.	Yel.	22	2.65	1.70	0.88	1.77
" 22	12.30 P.	2	35.0	Acid	Yel.	20	1.63	1.70	0.60	1.03
" 22	3.30 P.	3	40.0	Acid	Red-yel.	25	2.33	1.90	0.76	1.57
" 22	5.30 P.	2	25.0	Acid	Yel.	24	1.40	2.00	0.50	0.90
" 22	8.30 P.	3	38.3	Acid	Red-yel.	27	2.41	2.50	0.96	1.45
" 22, 23	7.30 A.	11	30.9	Acid	Red-yel.	27	1.94	2.30	0.71	1.23
" 23	10.30 A.	3	41.7	Neut.	Red-yel.	26	2.52	2.50	1.04	1.48
" 23	12.30 P.	2	55.0	Neut.	Red-yel.	24	2.80	2.00	1.10	1.70
" 23	3.30 P.	3	40.0	Acid	Red-yel.	27	2.52	2.80	1.12	1.40
" 23	5.30 P.	2	42.5	Acid	Yel.	27	2.67	2.50	1.06	1.61
" 23	8.30 P.	3	46.7	Acid	Red-yel.	26	2.82	2.60	1.21	1.61
" 23, 24	7.30 A.	11	40.9	Acid	Red-yel.	23	2.19	2.40	0.98	1.21
" 24	10.30 A.	3	33.3	Neut.	Yel.-red	27	2.09	2.50	0.83	1.26
" 24	12.30 P.	2	47.5	Neut.	Yel.	25	2.76	2.10	0.99	1.77
" 24	3.30 P.	3	36.7	Acid	Red-yel.	27	2.31	2.60	0.95	1.36
" 24	5.30 P.	2	37.5	Acid	Red-yel.	26	2.27	2.80	1.05	1.22
" 24	8.30 P.	3	30.0	Acid	Red	29	2.03	3.40	1.02	1.01
" 24, 25	7.30 A.	11	29.1	Acid	Red	27	1.83	3.50	1.02	1.81
" 25	10.30 A.	3	25.0	Acid	Red	28	1.63	3.50	0.87	0.76
" 25	12.30 P.	2	50.0	Acid	Red-yel.	28	3.26	3.00	1.50	1.76
" 25	3.30 P.	3	38.3	Acid	Red	26	2.32	2.70	1.03	1.29
" 25	5.30 P.	2	42.5	Acid	Red	25	2.47	2.80	1.19	1.28
" 25	8.30 P.	3	26.7	Acid	Red	27	1.68	3.00	0.80	0.88
" 25, 26	7.30 A.	11	32.7	Acid	Red	25	1.91	2.70	0.88	1.03

Inspection of the results in Series IV. shows the following:—

a. The volume per hour varied from 25.0 to 55.0, with an average of 39.7 c.c., or 953 c.c. in 24 hours; the averages for the different periods beginning with that ending at 7.30 a.m. were, in order, 36.6, 39.7, 47.5, 40.0, 36.7, 37.5, c.c.; the average for periods of gastric digestion was 39.1, for other periods 40.3—practically the same.

b. The reaction was acid in 27 and neutral in 9 samples. Of the nine samples not showing acidity, four were for the period ending 10.30 a.m., three 12.30 p.m., one 3.30 p.m., and one 5.30 p.m.; five were for periods of gastric digestion, four for others—showing no apparent connection.

c. The color was yellow in 8, reddish yellow in 18, yellowish red in 3, and red in 7 samples. The color was nearly proportional to concentration, the average gravity of yellow samples being 1024, of reddish yellow 1026, of yellowish red 1027, and of red 1027.

d. The gravity varied from 1020 to 1031, with an average of 1026; the averages for the different periods beginning with that ending at 7.30 a.m. were in order, 1024, 1025, 1024, 1026, 1026, 1028; the average for periods of gastric digestion was 1024, that for other periods 1026.

e. The solids per hour varied from 1.40 to 3.26, with an average of 2.34 grams, or 56.2 grams in 24 hours. The averages for the different periods beginning with that ending at 7.30 a.m. were, in order, 2.03, 2.30, 2.63, 2.44, 2.23, 2.42; the average for periods of gastric digestion was 2.39, that of other periods 2.30.

f. The urea per cent. varied from 1.70 to 3.50, with an average of 2.40 per cent.

g. The urea per hour varied from 0.50 to 1.50, with an average of 0.95 grams, or 22.8 grams in 24 hours; the averages for the different periods beginning with that ending at 7.30 a.m. were, in order, 0.87, 0.89, 1.03, 0.96, 0.91, 1.03; the average for periods of gastric digestion was 0.96, for other periods 0.94 grams.

h. The solids not urea per hour varied from 0.76 to 1.89, with an average of 1.39 grams, or 33.4 grams in 24 hours; the averages for the different periods, beginning with that ending at 7.30 a.m. were, in order, 1.16, 1.40, 1.60, 1.48, 1.32, 1.39; the average for periods of gastric digestion was 1.42, for other period 1.36 grams.

In this series also the forenoon periods show the maximum volume per hour, least acidity, lowest gravity, maximum solids per hour, and maximum solids not urea per hour; the urea per hour was equally high in the evening. No marked differences are shown between periods of gastric digestion and other periods.

SUMMARY OF RESULTS.

A critical examination of the results presented shows the very wide variations in the urine of a single normal individual even within short time intervals; also, that some constituents differed widely in quantity from the figures commonly accepted as normal; and, further, that certain regularities obtained between properties and time of day.

a. The volume per hour varied from 20.0 to 90.0, with averages of 35.3, 38.6, 38.5, 39.7 in the four series—a grand average of 37.9 c.c., or 910 c.c. in 24 hours. This is decidedly less than the quantity usually accepted as normal—about 1500 c.c. in 24 hours. It may be stated that

numerous observations on students of this university have indicated the average to be not far from 1000 c.c. A decided maximum hourly volume is shown in every series before noon.

b. The reaction was acid in 113, neutral in 33, and alkaline in 3 samples. The supposed connection between alkalinity and gastric digestion is not apparent in any series; 30 of the 36 samples not showing acidity were forenoon samples. The results seem to indicate that rest rather than gastric digestion diminishes the acidity of the urine.

c. The color was yellow in 23, reddish yellow in 59, yellowish red in 48, and red in 9 samples. In the main darker colors accompany higher gravities, but many instances occurred of particular light-colored samples having higher gravities than certain others with dark color, showing that the pigments were roughly proportional in quantity to the total solids.

d. The gravity varied from 1014 to 1032, with averages of 1024, 1024, 1025, 1026 in the four series—a grand average of 1025. The figures agree well with those commonly accepted for normal urine, except that gravities above 1030 were of rather frequent occurrence—10 samples out of 149. In every series the forenoon samples showed decidedly lower gravity than the others.

e. The solids per hour varied from 1.30 to 3.26, with averages of 1.91, 2.08, 2.08, 2.34 in the four series—a grand average of 2.09 grams, or 50.2 grams in 24 hours. This is decidedly less than the quantity usually considered normal—about 72 grams in 24 hours. In every series a decided maximum occurred shortly before noon; this may be a result of the period of rest, or it may be connected with the fact that forenoon samples had a low gravity, as already noted, and a more complete washing out of the system resulted from the passage of larger quantities of water.

f. The urea per cent varied from 1.20 to 3.50, with averages of 2.20, 2.13, 2.50, 2.40 in the four series—a grand average of 2.31 per cent. This figure is somewhat higher than the accepted normal average of 2 per cent.

g. The urea per hour varied from 0.37 to 1.50, with averages of 0.76, 0.77, 0.92, 0.95 in the four series—a grand average of 0.85 grams, or 20.4 grams in 24 hours. This is just two-thirds the quantity usually considered normal—30 grams in 24 hours. No marked regularity involving the time of day is apparent except that the figures were relatively high in the evening in all series.

h. The solids not urea per hour varied from 0.55 to 2.05, with averages of 1.15, 1.31, 1.16, 1.39 in the four series—a grand average of 1.24

grams, or 29.76 grams in 24 hours. This is decidedly less than the quantity usually considered normal—about 42 grams in 24 hours, when the total solids are taken as 72 grams and the urea as 30 grams.

The figures presented show that in a normal individual the composition and character of the urine may vary widely within short periods of time, and that even the twenty-four hours' urine may differ considerably from accepted standards for a man of average size. Also, the urine excreted during the forenoon is in most respects noticeably different from that of other parts of the day.

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June, 1905.

HYDATID DISEASE—REPORT OF 12 CASES AT THE MONTREAL GENERAL HOSPITAL: TWO OPERATIONS.

BY

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In presenting the following series of twelve cases of hydatid disease occurring in the service of the Montreal General Hospital and in reporting in detail two operative cases, I desire to call attention to the infrequency of this disease in this section of Canada, and to point out the difficulty in diagnosing intra-abdominal echinococcus cysts.

In 1882, Osler (1) collected from hospital records, journals, museums and personal experience, sixty-one cases for the whole of North America of which forty were native cases. Since then, isolated cases have been reported, from time to time, in Canada—and the rest of North America; but the total number on record is sufficiently small to warrant the collection of even a small series. Lyon (2), in 1902 collected 241 cases prior to this date, of which 58 per cent. occurred in Icelanders; 91 per cent. of all were foreign born; 71 cases occurred in Canada, and two were native Canadians.

The rarity of cases in Eastern Canada is easily explained by the comparatively small number of dogs in ratio to the human population. The *Taenia Echinococcus* finds its host in the dog, wolf and jackal, and, as the ova are excreted in the faeces, and reach the alimentary tract of

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man, through contamination of surface water or food, we find that most cases occur amongst races where the number of dogs is large, and the domestic relationships between man and the dog are most close. Lyon's figures, showing 58 per cent. of all cases on this continent to have been Icelanders, are in keeping with the ratio of dogs to man in Iceland, viz. one to three. Iceland, Australia, parts of South America and districts in the Canadian North-West furnish a large majority of all cases reported.

Almost all cases are intra--abdominal, and the liver is the commonest organ affected. The embryos pass quickly from the gastro-intestinal tract into the portal radicals, and the solitary liver cyst is the most frequent result. The conditions of multiple omental and peritoneal cysts; as is the second operative case I am reporting, is rather rare; and though I have found several instances recorded, most of them seem to have followed the rupture of a primary liver cyst, as occurred in the cases reported by Hartley (3) and Peyrot (4). Others are recorded by C. Phelps (5), Jackson of Queensland, and O'Connor of Buenos Ayres (6), in some of which the condition of multiple omental, and peritoneal cysts would appear to be primary. In such instances, it is asserted, the ova perforate the stomach, and intestinal walls, and develop into cysts beneath or on the peritoneal coat. All cysts seem to grow from the omentum or mesenteries rather than the parietal peritoneum, and are most common along the line of the colon.

Buck's Handbook of Medical Sciences states that fully 50 per cent. of all cases die within five years of time of infection, unless relieved by surgical means. In the face of such a mortality it would appear that laparotomy and proper surgical treatment of all liver and multiple cysts should be early carried out.

The following two cases, occurring in the summer service of Dr. J. M. Elder, in 1905, and one in 1902, in Dr. Shepherd's service, are the only ones that came to operation in the Montreal General Hospital in over forty years.

Mrs. N., aged 30, widow, admitted to the Montreal General Hospital under Dr. Elder, June 3rd, 1905, complaining of right sided abdominal pain with vomiting.

Personal History. She was born, and lived, in the south of England till she sailed for Canada, reaching Montreal one week prior to admission into hospital. She had been in domestic service since the age of ten, was married at age of twenty-four, had two pregnancies, last one five years ago, with tedious recoveries, and some puerperal infection both times. Ten years ago she suffered from "gastric ulcer," pain, vomiting,

hæmatemesis, for which she was for months in hospital, and later in a convalescent home. She "recovered completely," she states. After the first pregnancy, she was under treatment for "stomach trouble," this time had pain in epigastrium after food, vomiting, no hæmatemesis, but constipation and hæmorrhoids. After seven months she again recovered. This was between five and six years ago. Two years ago, in 1903, she had what she considered "lumbago," at which time she had pain in the back between the shoulder blades, behind the left scapula, and in the right hypochondrium, which was constantly present for considerable time. Associated with this there was tenderness in the epigastrium with some abdominal distension, and patient had to discontinue the wearing of corsets. She vomited several times, and there was an exacerbation of the usual constipation. She had never had jaundice, or attacks of hepatic colic. Appetite had always been good, and weight had been uniform.

For years past there had always been dogs in the house, usually two or more. She knew of no cases of similar disease in vicinity of Woolwich where she lived since her marriage.

Present illness. The patient landed in Canada, May 27th, 1905. Present acute attack began June 1st, preceded by one week's malaise, loss of appetite, and insomnia, with slight pain in the right iliac region. Within four hours of onset of severe pain, patient had to take to bed. She vomited several times. Extreme tenderness and abdominal distension with constipation suggested the diagnosis of acute appendicitis to the attending physician, and she was sent to the Montreal General Hospital in a street car on June 3rd, her symptoms having considerably abated.

On admission, there was slight elevation of temperature, 99°-100°; tongue slightly coated, slight abdominal distension—bowels had been moved with salines—some pain and general tenderness, the latter most marked in upper and lower right quadrants. Tympany was present throughout abdomen. An indefinite tumour mass was palpable on deep pressure in gall bladder region, and deep palpation caused acute tenderness there. There was slight tenderness in right vaginal fornix. There was retention of urine on 3rd and 4th of June. A diagnosis of appendicitis, with local peritonitis, and possible gall bladder disease, was made, and the patient was prepared for operation on June 7th, when local and general conditions had greatly improved.

Operation.—The anæsthetic was ether; the operator, Dr. J. M. Elder. The usual incision was made in the right semi-lunar line, at the level of the appendix and the peritoneum was found congested, but no free

fluid. The appendix was long, larger than usual, showed some adhesions, but was not inflamed or congested. It was removed. Through this incision the lower surface of the liver was palpated, and a large tumour was felt in the region of the gall bladder. The appendix wound was closed without drainage and a second incision one and a half inch long was made vertically from the tip of the eighth rib on the right side. The peritoneum was much thickened, and showed recent inflammatory characteristics. The gall bladder was normal. To the right of this, and attached to the lower edge of the liver was a large, tense, cystic, white, glistening, nodular tumour, the size of a goose's egg. The bowel was adherent to it. The abdomen was well walled off from it by swabs, and aspiration was attempted, but failed. The cyst was incised, and a large quantity of viscid fluid with daughter cysts was evacuated. After irrigation, the laminated mother cyst was pulled out by forceps under continuous irrigation, and the cyst cavity was packed with iodoform gauze. Hæmorrhage was slight. The edges of the cavity were brought up to the abdominal wall by silk worm gut sutures, and the wound closed as usual. Gauze was removed in forty-eight hours, and the patient made a good recovery, there being some discharge till the thirteenth day. Patient was up on the sixteenth day, and discharged on June 28th, three weeks after operation, both wounds perfectly healed, and abdomen presenting nothing abnormal. She reported on July 20th, and was quite well. Later she left Montreal and went to Owen Sound, where the upper wound reopened about September 1st, 1905, discharging some pus, and on last hearing from her, October 19th, 1905, the sinus was still open.

From the history one would judge that the growth of the cyst had begun about two years ago, and that the acute attack of peritonitis was due to a spread of continuity through the cyst wall, rendered tense by this time, of the ptomaines or toxins which are evolved by the echinococcus in its cyst-forming stage. Authors point out the sudden infection, sometimes fatal, that follows on an intra-abdominal rupture of one of these cysts. And, as in gall-bladder disease—empyema, without rupture, but under tension—we get a well marked peritonitis, it is likely that, similarly, the echinococcus produced the condition of peritonitis which brought the patient to the hospital. The infrequency of this intra-abdominal condition predisposes to a mistake in diagnosis as occurred in this case, especially as there was, co-existing with the signs of peritonitis in the gall-bladder region, local pain and tenderness in the region of the appendix vermiformis.

Case I.—S. M. C., aged 37, labourer in coal yard, resident of Montreal.

Personal History.—Born in Ireland, came to Canada sixteen years ago; had smallpox at age of nine, was in Montreal General Hospital with right sided pleurisy and pneumonia in March, 1904; no family history of tuberculosis. The patient lost about fifty pounds in three month prior to admission.

Present Illness began suddenly August 13th, 1905, three days before admission to the medical side of the Montreal General Hospital under Dr. Lafleur, to whom I am indebted for the notes of his case prior to his transference to Dr. Elder's service on September 17th. Onset was with acute pain in the region of the umbilicus, which continued with lessening severity till after admission. Pain was cramplike and worse at night. Abdominal distension was noted next day, and patient vomited but once, on August 15th. Bowels were regular; no special abdominal tenderness was noted.

Condition on admission. Poorly nourished man, complexion muddy, slight icterus of conjunctivæ.

Respiratory system. Has had cough for four years, and mucopurulent expectoration, now showing tubercle bacilli. Both bases and left apex show physical signs of tuberculous infiltration. Temperature range was 99° to 100 $\frac{2}{3}$.

Alimentary system. Appetite good, bowels regular, tongue coated, abdomen distended and very tense, tenderness about umbilicus. The percussion note is dull all over the abdomen, no change with change of position, marked fluctuation present. A lobulated nodular mass is to be felt in the right hypochondrium.

On August 18th, an aspirating needle was inserted midway between the umbilicus and pubes in the median line and thirty-five ounces of greenish yellow fluid—"bile stained pus"—was withdrawn. It was then made out that the liver was not enlarged, and the spleen was not palpable. A nodular mass could be felt midway between navel and the end of the ninth rib on the right side. Three days later the case history states that dulness was again extending down from the hepatic cardiac dulness to one inch below the umbilicus; marked fluctuation and succussion was found over dull area. On August 27th, six days later, a marked friction rub was felt by the hand laid on the epigastric region. Patient was free from pain and tenderness. He then developed double otitis media, and was under Dr. Stirling's care.

On September 15th Dr. Elder saw him in consultation and agreed with the medical diagnosis of tubercular peritonitis and advised exploratory laparotomy, for which he was transferred to the surgical side on September 17th, and was operated upon, the following day, under ether anæsthesia by Dr. Elder, when a most interesting intra-abdominal con-

dition was found. An incision three inches long in the median line above the umbilicus revealed a thickened peritoneum, but it was smooth and glistening, and showed no miliary tubercles. There was no free fluid. The great omentum was dark red, thickened, somewhat stringy in appearance, and showed numerous firm, tense, whitish bodies, some yellow in colour, varying in size from pin heads to small cystic tumours the size of plums. They had no pedicle; they shelled out readily in most cases without bleeding, and were sub-serous. Some contained a clear, but viscid fluid, whilst others were more fluid. There were general soft adhesions throughout the abdomen, and very dense adhesions of the transverse colon, and in the region of the under surface of the liver. A tongue shaped lobe of liver-substance projected down to the left of the median fissure, dark purple, but showing minute whitish specks, suggestive of miliary tubercles. There was no tumour mass or area of softening made out of it. Gall bladder was normal. The gastro-hepatic omentum was adherent to the liver, also the colon to neighbouring structures, and these adhesions were dense. Along the course of the colon, as far as the sigmoid, were multiple cystic tumours, several large ones in the region of the spleen. The bowel throughout was smooth, and normal, in appearance. No enlarged mesenteric or retro-peritoneal glands were palpable. Many of the tumours were removed; the abdomen was flushed out with hot saline solution, and was closed without drainage. It was noteworthy that there was nothing to be found of the large cyst which was tapped on the medical side, and absolutely no free fluid was found. The patient made an uninterrupted recovery, and left the hospital October 7th, three weeks after operation. On that day his abdomen was moderately and symmetrically distended, but rather more in the region above the umbilicus; it was soft, not tender, and there was no fluctuation, no mass palpable, but the abdomen gave the impression of containing fluid. Percussion above the umbilicus gave a dull note, impairment in flanks, save in the right iliac fossa, which was tympanitic. The patient had no pain, and all functions were normal.

This case was most interesting in that there was a general peritoneal involvement, and no evidence at operation of a primary liver cyst. Patient was shown, December 1st, before the Montreal Medico-Chirurgical Society. He then had a large median cyst above the umbilicus, very tense; and, to its right at the lower border, a second smaller cyst, about the size of a marble could be felt. The large cyst was about seven, by seven and a half inches. There was no tenderness or pain, and the patient was experiencing no difficulty in shovelling coal ten hours a day. The hypogastric veins were enlarged. There was no

ascites. Operation was advised, but for the present refused. Evidently since the operation some of the small cysts have taken on growth, and the number of such cysts still present is difficult of determination. Cases of repeated operation, finally resulting in cure, are noted, and as this patient's physical condition is good this procedure will be carried out if he consents. His pulmonary symptoms are not so evident as they were; he has very little cough or expectoration.

In both cases the hospital pathologist, Dr. B. D. Gillies, reported a laminated cyst wall with numerous hooklets—echinococcus cyst.

The interest which these two cases aroused induced me to search the records of the Montreal General Hospital for cases of hydatid disease, and I find them very rare. Prior to 1882, Osler collected some three cases, two of which were found post-mortem at the Montreal General Hospital, and one was found accidentally in the cadaver at the summer class of operative surgery in 1877. These he has reported.

In searching the records I find a case of hydatid disease recorded in 1871, and this case was discharged from the hospital, not reaching Osler's series. Besides this, a case in 1867 of hydatid cyst of the liver was mentioned in one of the early annual reports of the hospital, and may be the case Osler mentions in his article, as having been said to have come to post-mortem, but which he did not include in his series. Prior to 1882, then, we find four cases of solitary liver cyst. Since 1882 I found but four cases in post-mortem records comprising over 2,500 autopsies up to date, November, 1905, or one in about 850 autopsies. There have been three cases that came to operation, making a total of seven cases since 1882 which, with five cases before that date, make a small total of twelve cases in the records of the Montreal General Hospital. All of these cases I have tabulated briefly in sequence:

Case I.—Mentioned in annual report of the Montreal General Hospital, in year 1867. No history. "Hydatides-hepatis: died." Cannot find autopsy record. (Not published.)

Case II.—Annual report of Montreal General Hospital for 1871. No history. "Hydatides uteri: discharged." (Not published.)

Case III.—Case I in Osler's series and autopsy record found in Pathological Reports of the hospital for 1877 and 1879. This case was the one found in summer class of operative surgery in 1877. Patient was an adult tramp dying of pneumonia; no past history obtained. Cyst was size of orange with daughter cysts and hooklets, situated in the right lobe of the liver.

Case IV.—English woman, æt. 40, died of pneumonia, single cyst in

liver, hooklets found in pultaceous mass in cyst in liver. No history, date not given (Case II in Osler's series).

Case V.—No. 4 in Osler's series was one of a single cyst in liver with no history.

Case VI.—Was one found post-mortem by Dr. Lafleur, and reported by him before the Montreal Medico-Chirurgical Society on February 5th, 1892.⁷ Patient died of thrombotic softening of the pons, and post-mortem revealed a calcified echinococcus cyst in right lobe of liver, specimen No. 37. 48 in the museum of the McGill Medical Faculty. No definite history obtained as to residence or nationality, but was not a native of Canada. This case was found in 1888.

Case VII.—Was one that came to autopsy September 5th, 1896, dying of genito-urinary infection; service Dr. Shepherd. In the liver was a greyish white cyst shelling out easily, containing pale fluid and translucent granules on cyst wall, characteristic laminated wall, and hooklets present. One ascaris was found in stomach, and one in small intestine. Patient was a man aged 69.

Case VIII.—Autopsy No. 82, 1895. Private case of Dr. Glen, no history, male, adult, died of pyloric colloid cancer. Liver showed three encapsulated caseous masses, size of walnuts. These showed laminated walls, and prolonged search showed a few hooklets. (Not published.)

Case IX.—Autopsy No. 21, 1900, female, aged 36, service Dr. Finley (case report medical series 1900, No. 65). Patient was a native of Ireland, had lived in Canada since infancy, no gastric history. cardio-renal case. The post-mortem showed in the dome of right lobe of the liver a white, hard nodule which proved to be an echinococcus cyst. (Not published.)

Case X.—Case of a Roumanian, teacher, male, aged 41, in Montreal five weeks before admission to Dr. Blackader's ward, Montreal General Hospital, complaining of pain and swelling beneath sub-costal margin on right side. Under anæsthetic, tumour made out, giving fluctuation: on aspiration, clear fluid found, no hooklets found. He was transferred to surgical side, and operated on by Dr. Shepherd, when a large cyst attached to the liver was found, and on being incised it was found to contain clear fluid, no bile, and many hooklets and scolices. Drainage used and patient was discharged on 45th day with small sinus at operation site. Case was diagnosed previous to operation by Dr. Ridley McKenzie and reported by him.⁸ This case entered hospital on August 20th, 1902.

Case XI.—Female, native of England, aged 30, entered hospital June 3rd, 1905, single cyst in liver. Operation: recovery. Specimen in museum of McGill Medical Faculty. (Not published.)

Case XII.—Male, in Canada fifteen years, aged 37. Entered hospital August 16th, 1905. Multiple omental and peritoneal cysts. Operation. Specimen in museum of McGill Medical Faculty. (Not published.)

I desire to express my gratitude to Dr. Elder for the privilege of reporting these two cases, and to Dr. Gillies, and others, for aid in the search for cases in the records of the hospital.

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THE CURABILITY OF PULMONARY TUBERCULOSIS; WITH REPORTS OF CASES TREATED BY INHALATION OF OZONE.

BY

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Our progress in the treatment of pulmonary tuberculosis has already been so great, and the results in many cases so satisfactory that it is now very generally admitted by advanced thinkers in the medical profession that pulmonary tuberculosis is a curable disease. The truth of this is frequently verified by post-mortem examinations. Indeed, it is well for the physician to bear this in mind and inspire this belief in the minds of his patients.

Early diagnosis, isolation, education and the careful destruction of the sputa, have already done much to lessen the mortality from what has been appropriately called the white plague.

For many ages, almost since the dawn of medical science, it has been recommended that persons suffering from consumption should reside in an elevated pine forest, living and sleeping in the open air; that is to say, that patients have been advised to live in an atmosphere of fresh air, laden with ozone, and thoroughly permeated with the aroma of a germacidal carbonaceous vegetable oil.

To-day we find, that the open air treatment is the principal feature in the very satisfactory and successful campaigns which are carried on under the most advanced and enlightened opinions of the leading medical men in the various sanatoria, which are now being established in

nearly every civilized country in the world. Many cures, or at least improvements, are reported as having been effected at those institutions.

Attention to the stomach and digestive organs is of first importance, nourishment is the mainspring of success. Upon it depends the success of all treatment. Whatever aids nutrition, digestion, assimilation and metabolism is of the greatest value in the treatment of pulmonary tuberculosis. It is, therefore, very important that the food should be highly nutritious, easily digested and rich in proteids. It should consist chiefly of milk, raw eggs, rare cooked meats, game, fish, oysters, vegetables, wholesome bread, lactalbumin, etc. The most essential of these is lactalbumin, which is the soluble proteid of milk, and is made by treating whey with alcohol. Cow's milk, with the exception of colostrum, contains one-half per cent. of this proteid and immediately after calving sixteen per cent. of lactalbumin, and this diminishes to one-half per cent. on the eighth day. Farmers are well aware that this colostrum or milk during the first eight days has a stimulating and invigorating influence on the young. In the case of the mare immediately after foaling, the milk contains eighteen per cent. of lactalbumin. This excess of lactalbumin in the milk of the mother after the birth of her young is an inconvertible law in the mammalia. Human milk contains three times as much lactalbumin as cows milk. Lactalbumin is soluble, requires no digestion, is rapidly absorbed, easily assimilated and acts not only as a food, but by its stimulating influence through the nervous system aids the digestion and assimilation of other foods. The system will absorb from soluble proteid, five times the amount necessary to sustain the equilibrium of nitrogenous products in the body, thus fortifying nature in her fight with disease.

In addition to the above, during the past five years I have used with marked results, ozone with camphoric super-oxide as a carrier. As is well known to the medical profession, inhalation of ozone in a highly concentrated forms is very irritating to the air passages. We find, however, that this difficulty may be overcome by inhaling nebulized camphoric superoxide for three minutes, when it is then possible to breathe ozone in almost any reasonable strength without irritation. This, no doubt, is due to the fact that the mucus membrane of the air passages becomes coated with the peroxidized oil, which is at once decomposed in the presence of the moisture liberating cineol and passing on nascent or active oxygen into the tissues. The cineol again takes up oxygen from the ozone, and then redecomposing, in this way acts as a continual carrier for the oxygen. Ozone thus inhaled into the lungs oxidizes and destroys the various toxins produced by the

bacilli, and also at the same time vitalizes the corpuscles of the blood and consequently the circulation of the entire body. Pure, rich ozonized blood, as is well known, means resistance to disease and offers the best condition of cure where disease has gained a foothold. Camphoric superoxide $C_{10}H_{18}O_2$ is made by passing ozone through cineol $C_{10}H_{18}O$, the active constituent of the oil of eucalyptus globulus. Chemists tell us that this oil has the property of decomposing in the presence of water liberating peroxide of hydrogen.

For the production of ozone I have found it economical, advantageous and convenient to use an electrical generator invented by A. S. Ramage of Cleveland, now of Detroit. It is run by an alternating current of 110 volts. The current is regulated by a controller by means of which any desired strength of ozone can be produced, even to the extent of forming nitrogenous compounds, which may set up an acute bronchitis, but in that event it must be remembered that the inhalation of the ozone should be discontinued for a few days until this active condition has subsided. The generator is placed in the patient's bedroom, which should be large, well ventilated, and situated so that it will receive the greatest possible amount of sunlight. After the patient has inhaled and nebulized camphoric superoxide for three minutes, the current is turned on and the generator allowed to run from eight to thirty minutes, according to the size of the room, strength of current and stage of disease. The patient rests in this atmosphere from 9 p.m. to 7 a.m., and for four hours during the day with windows and doors closed. During the intervals the room should be thoroughly ventilated and the patient should take exercise in the open air. An exception to the above should be taken in cases where patients have high temperatures,—they should then have perfect rest.

I find that five or six weeks of this treatment in cases not too far advanced, have resulted in a marked improvement. There has been a noticeable reduction in the temperature and in the rate of the pulse. The cough and expectoration have diminished, the bacilli have gradually disappeared from the sputum, and the appetite has improved, the patients have gained in strength, and there has been a decided increase in vitality. All the cases treated during the early stages, and also a few in the advanced stages, have been apparently cured in from two to six months. In advanced and hopeless cases, although lives have not been saved, the patients experienced considerable relief and comfort.

Case No. 1.—Miss D., aged 27, consulted me on April 21st, 1900, suffering from pulmonary tuberculosis. She had been in failing health for some time, had an irritating cough with abundant expectoration.

Physical examination showed slight dulness, increased vocal fremitus, dry, moist and crepitant-ales, prolonged expiratory murmur and increased voice sounds over the right supraclavicular, clavicular, and sub-clavicular regions. Examination of the sputum showed the presence of bacilli of tuberculosis.

I advised fresh air treatment, attention to diet, etc. On September 15th, 1900, physical examination showed the disease to be advancing. There was evidence of a small cavity in the apex of the right lung, temperature ranging from 99 to 102°, pulse 110 to 120, cough and expectoration increased. On September 25th, 1900, treatment with ozone was commenced. She slowly but gradually improved till February 22nd, 1901, when all evidence of active disease in the lungs had disappeared. In May she went out to the Canadian North West, returning on December 16th, 1901, with a relapse. There were a few moist rales over the apex of right lung. She at once resumed treatment with ozone, and after six weeks the lungs were apparently free from active disease. She returned to her home in Colerain, Ont., on February 1st, 1902. It is now three years and eight months since the treatment with ozone was discontinued. There has been no return of the disease and she is at present in perfect health.

Case No. 2.—Mr. S., aged 35, consulted me on October 25th, 1900. Physical examination showed marked dulness, prolonged expiratory murmur, exaggerated voice sounds and moist rales over the upper lobe of left lung, pulse 110, temperature 102. Examination of the sputum showed the presence of the bacilli of tuberculosis.

On November 5th, 1900, treatment with ozone was commenced. After six weeks there was a marked improvement, and at the end of three months all evidence of active disease in the lungs had disappeared. It is now four years and eight months since the treatment with ozone was discontinued. He has had no return of the disease, has followed his usual employment as manager of a lithographic company and is at present in perfect health.

Case No. 3.—Mr. D., aged 25, a farmer, consulted me on May 4th, 1901. For two years before consulting me he had been under treatment for pulmonary tuberculosis. Physical examination showed extensive tubercular deposits in the upper lobes of both lungs. Tubercle bacilli were present in the sputum in numbers, pulse 110, temperature 103, chills and night sweats. I considered the case too far advanced for treatment, but at the earnest solicitation of his father I decided to give him a trial.

He commenced treatment with ozone on May 6th, 1901. After a

few weeks his symptoms showed marked improvement, which continued till August 1st, 1901, when all evidence of active disease in the lungs had disappeared, and he returned to his home in Gorrie, Ont. On February 8th, 1905, three years and six months after the treatment with ozone had been discontinued I received a letter from him in which he states that he has had no return of the disease, and that he is at present feeling perfectly well and strong and working in a flour mill.

Case No. 4.—Miss S., aged 21, a domestic, consulted me on December 1st, 1901. Family history, mother and two sisters died of consumption, the patient being the only survivor of the family. For about two months she had been troubled with cough, profuse expectoration and night sweats. Physical examination showed evidence of a slight deposit in the upper lobe of left lung. Examination of the sputum showed the presence of the bacilli of tuberculosis.

Treatment with ozone was commenced on December 7th, 1901, and continued for eleven weeks, when all evidence of active disease of the lungs had disappeared, and the treatment was discontinued. She resumed her former employment as domestic and enjoyed good health for two years and six months. On October 12th, 1904, she was seized with pleuritic pain in the left side while working as a domestic in a summer hotel in Muskoka. She consulted me on October 25th, 1904. Physical examination showed the left pleural cavity filled with fluid, pulse 104, temperature 102. On November 20th I aspirated and drew off four pints of a clear fluid, slight cough and expectoration continued. On January 10th, 1905, examination of the sputa showed the presence of the bacilli of tuberculosis. She resumed treatment with ozone on February 8th, and gained rapidly in flesh and strength till July 1st, when her pulse and temperature were normal, and the lungs showed marked improvement. On account of financial reasons the treatment was discontinued, and she went to the country to visit friends, returning to Toronto on September 1st, feeling well and strong, but physical examination showed that there was still active disease in the lower part of the upper lobe of left lung. She is at present working in a factory running a sewing machine during the day and studying stenography in the evenings. When circumstances permit she intends having the ozone generator installed in her sleeping apartment.

Case No. 5.—Mr. G., aged 21, consulted me on April 11th, 1902; he had been in failing health for five months, temperature 100, pulse 90. Physical examination showed tubercular deposits in the upper lobe of left lung, and the bacilli of tuberculosis were present in the sputum.

He commenced treatment with ozone on April 20th, 1902, and, after

two months all trace of active disease in the lungs had disappeared. It is now three years and four months since the treatment with ozone was discontinued. He has had no return of the disease, has followed his usual employment, and is at present in good health.

Case No. 6.—Mr. Q., aged 50, consulted me on June 25th, 1902, for hæmoptysis. Physical examination showed dulness, increased vocal fremitus, prolonged expiratory murmur, and moist rales over the upper lobe of right lung, pulse 95, temperature 100. Examination of the sputum showed the presence of the bacilli of tuberculosis.

He commenced treatment with ozone on June 27th, 1902. After two months all evidence of active disease in the lungs had disappeared. It is now three years and two months since the treatment was discontinued. He has had good health, no return of the disease, and follows his usual employment as street car conductor.

Case No. 7.—Miss B., aged 16, consulted me on January 17th, 1903, For the past three months she had been under medical treatment for typhoid fever. She had coughed with slight expectoration, temperature 101, pulse 120, and the bacilli of tuberculosis were present in the sputum. Physical examination showed slight dulness and few moist rales over the apex of the left lung, the abdomen slightly distended and tender.

Treatment with ozone was commenced on January 22nd, 1903. As there was evidence of fluid in the abdominal cavity, I opened the abdomen on February 10th and found the peritoneum studded with tubercles. The peritoneal cavity was thoroughly washed with hot normal salt solution. The patient made a good recovery. On April 6th, 1903, all evidence of active tubercular disease had disappeared, and she returned to her home in Woodstock. It is now two years and six months since the treatment with ozone was discontinued. There has been no return of the disease, and she is at present in perfect health.

Case No. 8.—Miss S., aged 22, a stenographer, consulted me on September 20th, 1903. One year previous she had had two enlarged cervical glands removed from the right side of the neck. For the past six months she had been under medical treatment for pulmonary tuberculosis. The bacilli of tuberculosis were present in the sputum. Temperature 101, pulse 98. Physical examination showed tubercular deposits in the upper lobe of right lung. There was marked dulness, dry and moist rales, prolonged expiratory murmur and increased voice sounds all over this lobe.

Treatment with ozone was commenced on September 25th, 1903. For two weeks the temperature ranged from 99 to 101, pulse 90 to 100. After this the temperature and pulse fell gradually, reaching normal on

November 10th, 1903, when all physical signs of active disease in the lungs had disappeared, and an examination of the sputum showed the absence of the bacilli of tuberculosis. It is now two years since the treatment was discontinued. She has had no return of the disease, has followed her usual employment as stenographer, and is at present in perfect health.

Case No. 9.—Mrs. R., aged 35, consulted me on April 10th, 1904. For the past year she had been under treatment for pulmonary tuberculosis. In February, 1903, she had a severe hæmorrhage from the lungs, after which her physician found the bacilli of tuberculosis present in the sputum.

She had a persistent cough with profuse expectoration, was very weak and emaciated, temperature 101, pulse 120. Examination of the sputum showed the bacilli of tuberculosis still present in numbers. Physical examination showed extensive tubercular deposits in the upper lobes of both lungs.

Treatment with ozone was commenced on April 15th, 1904. For six weeks the temperature ranged from 97 to 102, pulse 115 to 120, cough and expectoration increased. After this there was gradual improvement until August 20th, when all signs of active disease in the lungs had disappeared. Examination of three specimens of sputum showed absence of the bacilli of tuberculosis. On September 1st, 1904, she returned to her home in Newfoundland. I had a report from her ten months later saying that there had been no return of the disease, and that she was enjoying good health.

Case No. 10.—Mrs. H., consulted me on August 16th, 1904. Her father, mother and one son had died from pulmonary tuberculosis, and one daughter, aged 13, had had the disease for three years. For six years she had been in poor health, and for the past two years had been under medical treatment for pulmonary tuberculosis. She suffered much from cough and dyspnoea, temperature 102, pulse 120. The bacilli of tuberculosis were present in numbers in the sputum. Physical examination showed extensive tubercular deposits in the upper lobe of both lungs.

She commenced treatment with ozone on September 10th, 1904, and on September 20th had a severe attack of acute bronchitis, temperature 103, pulse 120, respirations 30, with distressing dyspnoea. The ozone was discontinued for three days when it was resumed. After this she gradually improved until December 10th, when all symptoms of active disease in the lungs had disappeared and the treatment with ozone was discontinued. She had gained rapidly in flesh and strength, and on

December 20th resumed her household duties, doing all the work for a family of eight. In June she seemingly contracted a cold, but on examination I detected a few rales at the apex of the left lung and the bacilli of tuberculosis present in the sputum. She resumed treatment on June 20th by sleeping in the ozone atmosphere during the night and working during the day. She is gradually improving and still under treatment.

Case No. 11.—Miss H., aged 13, mentioned in the report of case No. 10 as daughter, consulted me on September 1st, 1904, pulse 100, temperature 102. Physical examination showed extensive tubercular deposits in the lower lobe of left lung. The bacilli of tuberculosis were present in the sputum.

She commenced treatment with ozone on September 10th, 1904, using it in the same room with her mother. After three months' treatment all evidence of active disease in the lungs had disappeared. It is now ten months since the treatment with ozone was discontinued. There has been no return of the disease and she is at present in good health and working as a clerk in a store.

Case No. 12.—Mr. St. J., aged 23, consulted me on October 31st, 1904. He had been in the National Sanitarium for the past five months. His history, as given by the patient, indicated that the disease was advancing. Physical examination showed tubercular deposits all over the upper lobe of left lung, temperature 101, pulse 120. Treatment with ozone was commenced on November 23rd, 1904, at his home in Uxbridge, and, as the electric current was not available during the day he was only able to be in the ozone atmosphere during the night. After four months' treatment all evidence of active disease in the lungs had disappeared. It is now seven months since the treatment with ozone was discontinued. There has been no return of the disease, he has gained rapidly in flesh and strength and is at present in perfect health.

Case No. 13.—I was called to see Mr. M., on June 16th, 1905. His history as given by the patient indicated that he had been suffering from pulmonary tuberculosis for two years and six months, and had just returned from the National Sanitarium, where he had been under treatment for the past four months. He was very weak and confined to bed.

Physical examination showed extensive tubercular disease all over both lungs. In the right lung there were three large cavities, one in each lobe. I considered his case hopeless, but, at his earnest solicitations I installed in his room an ozone generator. The ozone gave him much relief and comfort, cough and expectoration diminished, his

strength improved, and for two months he had great hopes of recovery.

I visited him on September 10th and found him enjoying a smoke. He expressed himself as feeling well, with scarcely any cough or expectoration, able to take moderate exercise and had visited the Toronto Exhibition.

Physical examination showed very few rales over the lungs. The cavities dry and much contracted. I was called to see him a week later. He was suffering from congestion of the lungs, from which he died after thirty-six hours illness.

Case No. 14.—On March 13th, 1905, I was called to see Miss B., aged 24, who was suffering from pulmonary tuberculosis. She had been confined to bed for the past three months. Physical examination showed extensive tubercular disease of both lungs, with several cavities. The case was too far advanced to hope for any permanent benefit, but, as the patient was very anxious to have the ozone, the generator was installed in her room on April 12th. She experienced great relief, but grew gradually weaker, and died in August.

Case No. 15.—Mr. S. consulted me on May 13th, 1905. His mother died of consumption. He had been under treatment for pulmonary tuberculosis in the National Sanitarium, and from the patient's history the disease had advanced while there. Physical examination showed extensive tubercular disease in the upper lobe of left lung, and in the upper and middle lobe of right lung with three small cavities.

He commenced treatment with ozone on May 15th, and gradually improved until September 21st, when all signs of active disease in the lungs had disappeared and the treatment was discontinued.

Case No. 16.—Mr. F., aged 32, consulted me on May 15th, 1905. He had been under treatment in the National Sanitarium for the past four months for tubercular disease of the larynx and lungs. From his history, as given by the patient, he had not improved, and his symptoms indicated that the disease was advancing. He had lost his voice and could only swallow liquids in small sips. His vocal chords were completely destroyed by tubercular ulceration. Physical examination showed extensive tubercular deposits in the upper and middle lobes of right lung and in the apex of left lung.

Treatment with ozone was commenced on May 20th, 1905. The ulceration in the larynx had almost healed. He can now swallow liquids without discomfort and has gained in flesh and strength. Physical examination shows marked improvement of the lungs. He is still under treatment.

Case No. 17.—Miss B., aged 16, consulted me on June 18th, 1905.

Her physician had diagnosed tubercular disease in the upper lobe of left lung and had found the bacilli of tuberculosis present in two specimens of sputum. Three years previous she had a hæmorrhage from the lungs, and a second slight hæmorrhage two days before consulting me. Pulse 108. temperature 103 2-5.

Physical examination showed dulness, moist and crepitant rales, prolonged expiration and exaggerated voice sounds over the upper lobe of left lung, and pleuritic friction with moist rales over the lower lobe. The bacilli of tuberculosis were still present in the sputum.

Treatment with ozone was commenced on June 21st. On account of the patient having a high temperature she was instructed to take perfect rest in bed. There was a gradual improvement, the pulse falling to 80, temperature to 90, on July 10th. Examination of the sputum on August 22nd and also on September 5th showed the absence of the bacilli of tuberculosis. On September 1st all evidence of active disease in the lungs had disappeared. She was under treatment two months and eight days when the ozone was discontinued. On September 1st she went to Georgian Bay, returning on October 24th. When, on physical examination, I could not detect any evidence of active disease in the lungs. She had gained in flesh and felt well and strong.

Case No. 18.—Miss B., aged 6, sister of case No. 17, consulted me on June 21st, 1905. Two years previous she had had pneumonia in the right lung, followed by typhoid fever of two months' duration, after which she did not regain her former health. Physical examination showed dulness, exaggerated voice sounds, diminished vesicular murmur over the lower lobe of right lung, temperature 103 1-5, pulse 110. As there was absence of cough and expectoration I was unable to get a specimen of sputum for examination.

Treatment with ozone was commenced on June 21st and continued four months. The pulse and temperature fell gradually to normal, and at present the patient is apparently well.

Case No. 19.—Mrs. B., aged 41, consulted me on July 2nd, 1905. From her history, as given by the patient, two physicians had diagnosed tubercular disease of the lungs. In June, 1904, she had a hæmorrhage from the lungs. In January, 1905, had a second severe hæmorrhage and again a third hæmorrhage in March. She had lost six pounds in weight since the last hæmorrhage. Physical examination showed evidence of tubercular infiltration of the upper lobe of the right lung.

Treatment with ozone was commenced on July 4th and continued until September 20th, when all evidence of active disease in the lungs had disappeared, and she returned to her home in Stouffville.

RECURRENT ATTACKS OF CYANOSIS IN INFANTS.

BY

WILLIAM S. MORROW M.D.,

Montreal.

During the past six months two cases have occurred in my practice which resembled one another very closely and were apparently two examples of the same affection. They presented themselves as attacks of cyanosis recurring at irregular intervals and lasting from five to thirty minutes each. The patients were in both cases infants under one month old.

Case I.—On August 10th, 1905, Mrs. W., a rather delicate woman, was confined of her second child. It was a case of breech presentation, and the pains were frequent with very short intermissions. Thirty minims of Battley's solution administered by the mouth had little effect in checking the pains. Delivery was effected without any special difficulty, expulsion of the after-coming head being assisted by pressure on the fundus. The infant, a small male child, did not at first breathe.

Dr. Gordon, who was kindly assisting me in the case, succeeded in getting respiration established after working for some twenty minutes. The legs and scrotum, however, remained blue, and the colour of the right foot did not become normal for four or five days.

Soon after I arrived home from this case I received a message to return immediately as there was something wrong with the child. On my arrival he was deeply cyanosed and had been so for the half-hour it required for me to get there. Under artificial respiration recovery took place in a few minutes, and the normal colour returned to the face. In about an hour he again turned blue and it seemed that respiration had ceased. He was again brought around by artificial respiration. There were no abnormal sounds to be heard over the heart. I remained in the house for several hours and then taught the nurse how to carry out the artificial respiration and left. During the next day and night this child had about twelve such attacks, the last being when he was twenty-six hours old. From this time on he got along well and is at present a healthy boy of five months old.

Case II.—On November 21st, 1905, Mrs. C. was confined, also of her second child. She was five weeks ahead of her supposed term. This case started as a left occipito-posterior, but at the end of four or five hours of hard pains, just as I was about to get a brother practitioner to give chloroform while I assisted rotation, the head rotated spontaneously, and delivery took place a few minutes afterwards. The child

was a female, well formed, but small, weighing about five pounds. She cried a little shortly after birth, but scarcely any from this on. She slept more than most infants. On December eleventh, when she was twenty days old, I was hastily summoned and found her cyanosed and scarcely breathing. At one time I thought her dead, as she did not breathe at all for some seconds, but soon she began with small weak respirations which gradually increased in force until at last the attack passed off and the cyanosis disappeared. The clothing seemed tight and was loosened. The temperature was sub-normal. The heart sounds were weak, but there was nothing to suggest a murmur or hum. No dulness could be made out over the lungs, and weak breath sounds could be heard all over the chest. This infant kept having attacks of cyanosis for the next six days. She took nourishment in small quantities between the attacks, but became gradually weaker and died. She had fifteen or twenty attacks altogether, of which five were during the last eight hours of life. The attacks usually lasted about twenty minutes. No post-mortem was obtained.

In these two cases the attacks seemed similar and consisted essentially of a cessation, more or less complete, of respiration, and marked cyanosis. As artificial respiration was always carried out it is hard to say how long they would have lasted if left alone; but, as treated, the duration varied from five minutes up to half an hour. After a certain time both children would begin to breathe again gradually without any movements that could be classed as convulsive.

To me these attacks were at first very puzzling. It is a curious fact that in both mothers the confinements were at an interval of less than twelve months after the preceding ones.

As to diagnosis, the possibility of some cerebral lesion, laryngismus stridulus and patent foramen ovale were all considered, and tongue swallowing was suggested by an eminent confrère, but I do not think that any of these affections explain the symptoms satisfactorily. Emmet Holt describes cases in which the symptoms seem to have been similar to those observed in my cases and he found at the post-mortem examination that the condition present was "congenital atelectasis." The following quotations are taken from his account of this disease:

"The condition is one in which there is a persistence of the fetal state in the whole or in any part of the lung."

"It is frequently a great surprise to discover that a child has lived two or three months without using more than one-third of its pulmonary area."

"There may develop at any time, often quite suddenly and often without any assignable cause, attacks of cyanosis with prostration."

"Children may have several such attacks which do not excite suspicion since they pass away spontaneously. In other cases the symptoms are so severe that they may result fatally in a few hours, death being frequently preceded by convulsions. If energetically treated, the symptoms may pass away, but reappearing in a few hours or again in a week or more they gradually deepen in intensity until death occurs."

As an aid to diagnosis, he states that the symptoms are more important than the physical signs, as the latter are not usually characteristic.

As to treatment, the great thing is to get the child crying by cold water or slapping; failing this, artificial respiration must be practiced. As might be supposed, energetic treatment is often followed by recovery as in my first case.

There are some interesting questions raised by these cases.

Why should the cyanosis come and go? Why, when the child is suffering from lack of oxygen, should respiration be discontinued? I can only suggest a possible explanation.

It is a well known fact that there are fibres passing up from the lung in the pneumogastric nerve through which the pneumogastric nerve may be inhibited. It has also been proven that distension of the lung acts as a stimulus to these inhibitory fibres. In other words, any cause which brings about distension of the whole or part of the lung causes more or less inhibition of the respiratory centre.

Now, it seems clear that if part of the lung is in a condition of atelectasis and does not open up at all, the remaining part will tend to be over distended when the chest expands. Such over-distension might at any time reach a point when it would become a sufficient stimulus to the inhibitory nerves of the respiratory centre, and in this way there might be brought about the cessation of respiration and consequent cyanosis, which were observed in these two infants. The attack might come on quite suddenly as a result of a slight increase in the distension of the lung.

INTESTINAL OBSTRUCTION.

BY

GEO. E. ARMSTRONG, M.D.
Montreal.

Intestinal Obstruction is of interest to most of the members of the Society; the family physician, the man devoted to internal medicine, and the surgeon. Of the pathology, etiology, symptoms and treatment of intestinal obstruction we are not ignorant. It is a condition essentially remediable—so far as concerns the obstruction—and yet a condition in which the mortality is very considerable.

I do not purpose inflicting you with a resume of the literature of ileus. The subject is well worked out and clearly described in many text-books. I take it that there are two chief reasons for the unsatisfactory results obtained in so many cases, and these are, the delay in its recognition and faulty judgment in its treatment.

The reason for a tardy diagnosis is the fact that in acute obstruction but few of the symptoms are the result of the obstruction. The *collapse* results from the injury to the bowel wall, and its degree corresponds to the nature and severity of the lesion, its situation and the amount of bowel involved. Similar symptoms may be due to a perforation in the cæcum, or a typhoid ulcer, the passage of a gall-stone or the twisting of the pedicle of an ovarian cyst, or, as in a case I recently saw in Murphy's clinic in Chicago, to the rupture of an artery. Later on it may be due to profound septic intoxication. The point I wish to make clear is that at the onset it is not due to obstruction *per se*, but to the injury to the bowel wall.

The same may be added of "pain," which also is due to and in proportion to the lesion of the intestinal wall, its site or locus, and number of coils involved.

The vomiting, which is an important symptom, is reflex in the early stage and not due to the fact that the lumen of the bowel is occluded.

Constipation is the one symptom which may be due to the obstruction. We all know, however, that constipation may in itself be reflex and due to other influences, and again may be incomplete.

Meteorism, scanty urine, and indican urine, all occur at times independently of intestinal obstruction.

I think that it must be admitted that at the outset, at the first visit, the most expert hospital physician or surgeon is sometimes unable to make a definite diagnosis. If, however, these symptoms persist for 12,

24 or 36 hours, unrelieved by appropriate treatment, the diagnosis of obstruction becomes highly probable and almost a certainty. The persistence of these symptoms for 24 hours, unrelieved by treatment, not only renders exploratory laparotomy justifiable but obligatory. My experience leads me to think that family physicians are misled by the past history of the patient and by the injudicious use of drugs. As an example of the former I will recite one typical instance. I could give many equally striking examples:—

On the 19th of June, 1902, I saw Mrs. C., aged 72, with the family and the consulting physicians. The woman lay partly on her side and vomited every few minutes. The abdomen was enormously distended, tender, and the skin discoloured from hot applications. As a result of enemata and purgatives several stools had been passed, none of them being considered satisfactory. It was the 5th day of her illness; pulse 140 and compressible; surface, clammy; temperature, 98.4-5; Hippocratic facies well marked.

In this case the family physician was a particularly strong, accurate, capable man. He had attended this woman for over 40 years. During the past ten years he had attended her during six or eight similar attacks. In each one of these attacks recovery had promptly followed a free movement of the bowels. They had never lasted more than 24 or 36 hours. The husband and friends objected strongly to operation, because she had had so many attacks just like this one, and as soon as the bowels moved she had got better.

On opening the abdomen the peritoneal cavity was found to contain air, pus and faeces. A very large gall-stone was found in the ileum about six feet above the ileo-cæcal valve, and removed. About two feet above this was found a perforation situated close to the mesenteric attachment of the bowel and in size of sufficient diameter to admit a crow-quill. The edges were necrotic and the bowel and adjacent mesentery were covered with lymph.

At the autopsy the gall-bladder was found adherent to the liver and to the small intestine. Nature had performed chole-cystenterostomy. The gall ducts were patent.

Here then was the explanation of the preceding clinical history. The family physician had been misled by the patient's previous history. If laparotomy had been undertaken on the second day the result might have been more satisfactory. Time limit is useful in differentiating between malignant or benign conditions and should be a sign of importance in acute and chronic intestinal obstruction.

The injudicious and free administration of opium disguises the con-

dition of the patient, deceives the attending physician, and leads to dangerous delay. Only a few days ago a man was admitted to my ward with symptoms of intestinal obstruction. He had been discharged only ten days before, recovered from generalized peritonitis secondary to perforative appendicitis. He complained loudly of intermittent abdominal pain of a griping character. Vomiting was present and the vomitus was dark and odourless. Repeated enemata were given, each being returned well coloured. No flatus passed. The pain and vomiting continued and the abdomen gradually assumed a rounded form. Eighteen hours after admission he refused operation. Six hours later he accepted gladly. I found a small horseshoe shaped loop about the middle of the ileum. It was black, the mesenteric vessels leading to it thrombosed, the gut on the proximal side dilated and on the distal side collapsed. No band was observed. There was no volvulus. The obstruction was apparently due to the thrombosis of the mesenteric vessels and paralysis of the loop deprived of its blood supply.

I mention this case to illustrate my point, that is, had I allowed morphine, the pain would have been relieved, the patient and attendant deceived as to the progress of events and surgical relief unduly postponed.

Relief from pain and distress is a natural and legitimate demand. How can it best be afforded? By washing out the stomach, withholding all food and drink by the mouth and the liberal application of ice bags. If these measures are applied morphine will seldom be needed. If these measures are not effective and sufficient, operative measures should be seriously considered.

In another case the previous history of the patient led me to make a wrong diagnosis. Symptoms of acute intestinal obstruction developed twelve months after the supposed occurrence of a severe and prolonged attack of appendicitis recovering without operation. I thought that the obstruction was probably due to strangulation by bands. Instead of bands I found a gall-stone about the middle of the ileum. The patient made an uninterrupted recovery.

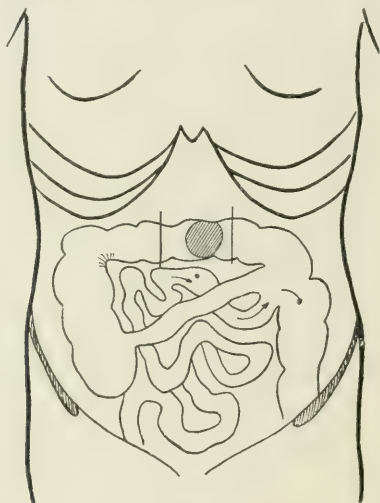
A history of chronic obstruction, preceding the symptoms of the acute form should aid in the diagnosis. Unfortunately it is not always duly appreciated. The spurious diarrhoea as well as the acute symptoms are only too often attributed to errors in diet, or other indiscretions. Here again the continuance of the symptoms in spite of ordinary treatment is the sign of great diagnostic value.

The surgical methods to be adopted in acute obstructions are, as a rule, clearly indicated; not so, however, in acute obstruction following the chronic form. Here great judgment and resource are required to

conduct the case to a successful issue. The most desirable alternative depends upon the cause and locus of the primary chronic obstruction, the condition of patient and the opportunities and surroundings of the operator.

I can best illustrate the procedures that may be adopted in varying conditions by a brief outline of illustrative cases:—

Mrs. L., aged 58, was brought to the Montreal General Hospital, December 2nd, 1902, with a diagnosis of appendicitis. She gave a history of having suffered for a period of seven months from recurring attacks of pain in the right side of the abdomen, radiating down to the groin, and accompanied by vomiting. She had suffered greatly



CASE I.

from constipation, and on several occasions diarrhoea had alternated with the constipation. During this period of seven months she had lost 44 pounds in weight. She was thin, poorly nourished, and the subcutaneous fat absent. Skin dry and loose; mucous membranes pale.

On palpation a hard mass about the size of a small apple was felt just below the costal margin to the right of the median line. On opening the abdomen the appendix was found to be normal. The growth was situated in the transverse colon. It was hard. The lumen of the bowel was nearly occluded. A few mesenteric glands were enlarged and hard.

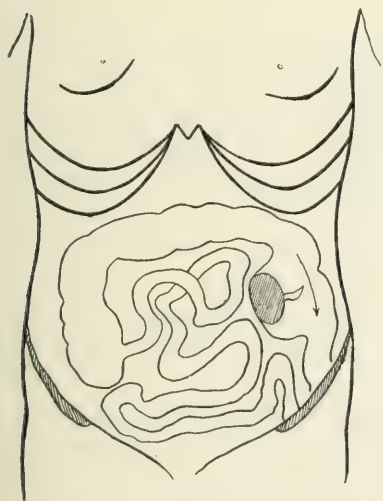
The condition of the patient was, I thought, sufficiently good to justify the immediate removal of the growth. I therefore made a lateral

anastomosis between the ascending and transverse colon, making a suture line of four inches. This insured an opening large enough to avert **danger** of future contraction. The condition of the patient being still good I removed the growth and the enlarged glands and closed both ends of the divided bowel. The pathologist reported the growth to be an adeno-carcinoma.

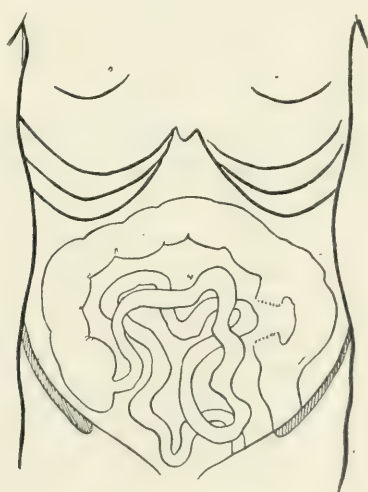
An excellent recovery followed and the woman is to-day, nearly three years later, in apparently perfect health, without any sign of recurrence. After the operation she gained 25 or 30 lbs. in weight.

This plan is ideal, but can only be attempted when the case is seen early before there is very great distension, and before the intestinal wall has become sodden and the patient profoundly toxic. The case also is evidence of the immunity from recurrence and of the comparative good health for a number of years, that may be expected when a carcinoma of the large bowel is removed early.

Mrs. W., aged 57, was admitted to the Montreal General Hospital on the 8th of August, 1903. The clinical history illustrates one or two of the difficulties of making an early diagnosis. Her complaints



CASE 2. No. 2.
After first operation.



CASE 2. No. 3.
After removal of growth.

on admission were: Pain and swelling in the left side of the abdomen; vomiting, constipation and loss of appetite. About seven months before admission she fell down stairs and received a severe blow on the left lower quadrant of the abdomen. She continued at work during the day but at night suffered from nausea and vomiting, and abdominal

pain. The pain in the left iliac region has bothered her ever since her accident, being often worse at night and aggravated by eating. She continued at work, however, until three days before coming into the hospital. Says she has lost weight. Has felt a constant desire to go to stool but unable to pass anything without taking medicine. Her chief diet has been raw eggs and brandy. The swelling of the abdomen has been present about a week. She works as a charwoman. Her mother's father died of cancer of the lip.

She is a small woman, about 5 feet 2 inches in height, and weighs 95 lbs. The abdomen is considerably distended and somewhat tender. Enemata bring away flatus and liquid fæces in considerable quantity. No vomiting. She was carefully fed and received enemata for 13 days. The enemata were nearly always effective but the distension did not diminish appreciably, and it was quite evident that she was losing ground. No tumour could be felt. Fluid was present in the abdomen. There were visible peristaltic waves. She never passed blood or mucous in the stools. From the foregoing it became pretty clear that she was suffering from incomplete chronic obstruction, probably due to a malignant growth.

On the 21st of August, 1903, through a lower median incision, I discovered a hard growth in the upper part of the sigmoid flexure.

So far as I could judge it would admit an ordinary lead pencil. The distended condition of the small intestines and the poor condition of the patient seemed to render radical procedure at the time inadvisable, so I made a large lateral anastomosis between the descending colon above the growth and the lower part of the sigmoid and closed the abdomen with drainage.

Her general condition gradually improved and she gained strength. Three weeks later, through a criss-cross incision on the left side, I removed the growth, closing both ends of the gut. This time I used drainage. A sinus persisted for a fortnight. She is now, two years later, free from any evidence of recurrence, and earning her living as a charwoman.

The report of the pathologist was as follows:

Adenoma-carcinoma of upper end of sigmoid.

In looking back on this case I think that in not attempting to remove the growth at the first operation there was greater safety. The operation would have been prolonged with added danger of sepsis and a little more loss of blood. As it was, very careful after-treatment was required to get her through the first 48 hours. The lateral anastomosis

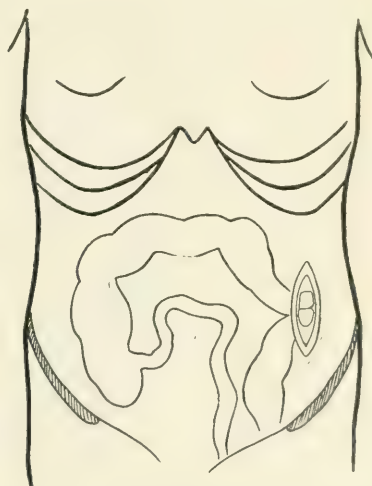
accomplished all that a colotomy could have done without the many obvious disadvantages of the latter.

The following case illustrates another method of dealing with chronic obstruction becoming acute and complete:

Mrs. L., aged 65, was admitted to the hospital on the 24th of June, 1905, complaining of abdominal pain, vomiting and constipation. She told us that her illness began 24 days before with griping pain in the abdomen and a desire to go to stool, but when she went she could not pass anything. During the first week of her illness she obtained some relief from purgation. She vomited several times during this week.



CASE 3. No. 4.
Showing tumour delivered.



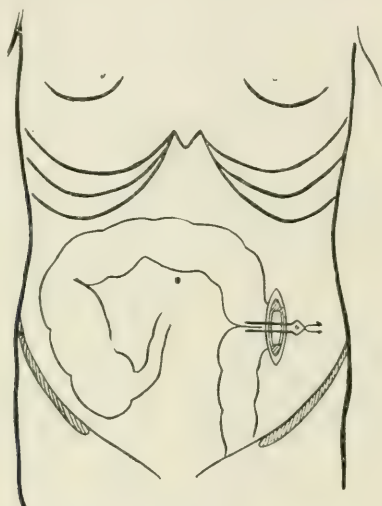
CASE 3. No. 5.
Tumour removed.

During the second week occasional vomiting occurred; purgatives failed, but she got relief from enemata containing turpentine. During the week immediately preceding her admission to hospital neither purgatives nor enemata were effectual.

On admission her temperature was 97.4° , pulse 124, respirations 48. The abdomen was uniformly distended, and on deep pressure was tender; tenderness in region of liver. No mass could be felt. She positively refused operation. During the following day the gravity of her condition was made plain to her, and her family and spiritual adviser urged her to submit to operation, but she still refused. On

the third day she consented. At this time her general condition was very bad and the abdomen greatly distended.

Through a median incision I felt a hard mass fixed in the sigmoid. The intestines were greatly distended, but the walls appeared to be in a fairly good condition. The median incision was closed and an incision made over the tumour. After ligating some of the mesenteric vessels I was able to deliver that portion of the sigmoid involved in the growth. At this stage the anæsthetist informed me that her condition was becoming desperate, I therefore anchored the growth well



CASE 3. No. 6.
Mikulicz clamp in position.

outside the abdomen, sutured the parietal peritoneum carefully around and inserted a small tube on the proximal side of the tumour and washed out the stomach. She slowly recovered. The evidences of toxæmia gradually disappeared and she became able to retain food. The next step was to remove the growth. About two weeks later, the abdomen being then soft and flat and the adhesions around the gut firm, I placed a Mikulicz anastomosis clamp in position. It came away on the third day. I think that she pulled it out. She was of an exceedingly low order of intelligence and we had great difficulty all along in controlling her. About a month later I placed the anastomosis clamp in position and succeeded this time in getting a very satisfactory anastomosis.

The growth proved to be an adeno-carcinoma.

On the third of August last I was asked to see M. S., aged 54; he was a patient in the Verdun Insane Asylum. A distinguished American surgeon was spending the day in Montreal and I asked him to go with me. We found the man in the infirmary suffering from abdominal pain and distension, diarrhoea and vomiting. He had been subject to so-called bilious attacks all his life, at intervals of about six months. These attacks have been accompanied by griping pain. Twenty years ago, he says, he had an attack similar to the present, but not nearly so severe, accompanied by pain and distension. Had been in the asylum for about ten years, and during that time has frequently suffered from abdominal pain and distension, but until the present, these attacks have yielded to enemata.

Seven days before admission to the hospital, while at work, he was suddenly seized with severe pain across the abdomen and extending into



CASE 4. No. 7.
Angulation of sigmoid.

the back. During the past week he has vomited several times. Has passed a liquid stool every day but one and sometimes two. Nevertheless, the abdominal distension is increasing. On admission the whole abdomen was markedly distended. There was slight tenderness on pressure but no resistance and no rigidity. No evidence of fluid. The superficial veins were prominent; heart displaced upward.

We differed in opinion as to the nature of the condition. My American friend was inclined to give a good deal of weight to the previous history of recurring bilious attacks, and suggested the possibility of these having been connected with the vermiform appendix. If so, the

present might have started as an appendicitis and the distension be due to a generalized peritoneal infection with adynamic obstruction. In my opinion the gradual but continuous and increasing distension developing concurrently with the passage of small watery stools and the absence of marked rigidity pointed rather to a chronic obstruction from malignant disease suddenly become acute but incomplete. I think that we each saw the force of the other's argument and we certainly were in perfect accord in advising an immediate exploratory incision.

As soon as he was removed to the General Hospital I opened the abdomen in the median line below the umbilicus, when there rolled out a distended sigmoid. The dilatation was very extreme, the walls of the gut being thin and transparent. The dilatation was apparently confined to a comparatively short bit of gut about 18 inches long and over 14 inches in circumference. The veins were dilated; the lymphatic glands enlarged. The upper end of sigmoid was apparently bound down by an abnormal and apparently congenital fold of peritoneum. The obstruction was clearly due to the dilatation and folding downward of the sigmoid over the more fixed first portion of the rectum. An assistant passed a tube up through the anus and rectum and then the distension of the intestines was easily made to disappear by gentle compression of the abdominal wall. The condition was interesting and quite unusual. Honours were easy in the matter of diagnosis.

I laid the two arms of the sigmoid side by side and made a large lateral anastomosis, the sew-line measuring $4\frac{1}{2}$ inches. The man is now in good health. My sutures failed at one point and there remains a sinus through which some gas and faecal matter escape, but this is gradually lessening. Occasionally there is trouble in getting the bowels to move satisfactorily. On two occasions when this occurred I inserted my finger through the sinus and found the loop of sigmoid filled with hardened faeces. It may be necessary to excise the loop, but of this I am not yet sure.

In a very interesting article, "Ueber eine typische peritoniale adhäsion," in the *Archiv. Fur Klinische Chirurgie*, Gersunsky describes a somewhat similar condition that he has observed associated with volvulus of the sigmoid and invagination of the sigmoid into the rectum, as well as in other conditions.

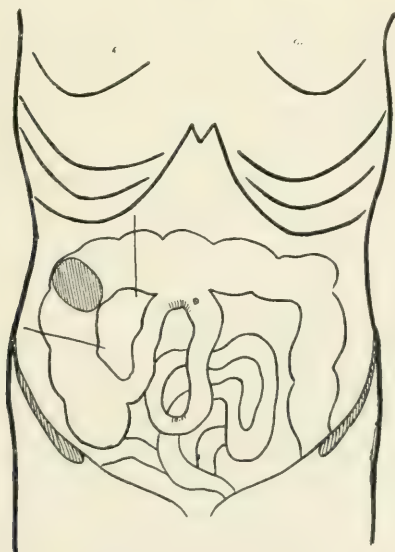
Ries has described a somewhat similar case in which, when the abdomen was opened the sigmoid was not twisted; but a slight impulse given to the upper half of it sufficed to make it drop over the lower half.

Kuhn has reported two cases in which mesosigmoiditis and symptoms of volvulus were present, and the patients died of perforation peritonitis when there was no real volvulus.

Delatour has reported four or five cases of a somewhat similar character. He has very appropriately termed the condition "Angulation at the sigmoid."

Ries may be right in considering the condition as one originally of mesosigmoiditis. In my case, the bands appeared to those present, and to myself, as congenital, but it is quite possible that they were acquired, and secondary to a chronic inflammatory condition of the intestine; that while some of the bands over the sigmoid were greatly stretched and thinned, yet other bands, by contracting and gradually approximating the two more fixed points, the lower end of the descending colon and the first portion of the rectum, had contributed to the development of the more obvious condition of the enormously dilated sigmoid flexure. Graser's diverticulæ were not observed.

In another instance I was asked to operate on a man in Cornwall, Ontario, in whom symptoms of acute had developed upon those of



CASE 5. No. 8.
Short circuiting of growth at hepatic flexure.

chronic obstruction. The very great distension and persistent vomiting had been present for 90 hours. The feeble, rapid pulse, dry tongue,

livid lips and cold, clammy surface were indications of the pronounced toxæmia present. No tumour could be felt.

Through a median incision I felt a hard mass in the hepatic flexure of the colon. The enormously distended condition of the small intestines made it very difficult to work. I therefore selected a loop of small bowel about the centre of the ileum, brought it outside the abdomen and through an opening succeeded in evacuating without the Wolf tube sufficient liquid fæcal matter to reduce the bulk of the intestine, and then joined the lower ileum to the transverse colon, leaving the removal of the neoplasm to the local surgeons, at a future date when the bowels had emptied, recovered their tone and the patient recovered from his toxæmia.

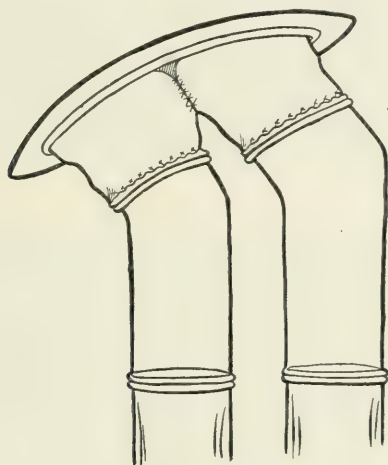
The recovery from this operation was uneventful so far as the abdomen was concerned. When preparing this paper I wrote to Cornwall for the future history of this case and was told in reply that he subsequently developed pneumonia and gangrene of the lung, from which he died after a rather long illness. The neoplasm had not been removed.

The cases in practice, of which I have given the condensed history, are types selected to illustrate the difficulties in diagnosis and the resources at our disposal. You may have noticed that two of these patients in their own words have stated that they suffered from griping pains and a desire to go to stool with ineffectual results. This is a symptom of great value, and in my experience is generally present in a modified form when the obstruction is in the small as well as when in the large bowel. There is this difference, that when the narrowing is in the small intestine there is more frequently a passage of a small amount of fæces, but the passage is not followed by a sense of relief, and even if these small stools are comparatively frequent the distension remains as before or gradually increases.

If I may repeat, the family physician is too ready to relieve distress by the use of his hypodermic syringe. It is a laudable desire on his part and a reasonable demand upon the part of the patient. But still higher ground is taken when time and opportunity are asked in which to come to an intelligent appreciation of the condition causing the pain. As a rule, to which there are few exceptions, patients are generally reasonable and patient when the difficulties and dangers are clearly, frankly and kindly put to them. Again, these are what may be called border-land cases, in which the truth is generally more quickly and correctly determined by a physician and surgeon acting together.

In the treatment of these cases I am satisfied that in the past, speaking at least for myself. I have often tried to do too much. Ideal sur-

gery is very fine, but it is sometimes followed by a high death rate. If the patient is in good condition and the walls of the intestines normal, or nearly so, then remove the growth. If the patient's condition is worse, but the intestinal walls fairly good, one may, without or after emptying some of the distended coils, do a short circuiting operation and later on remove the growth, closing in the divided ends. This procedure is very much better than bringing out a loop as in colotomy. An ileo-colostomy or a sigmoidorectostomy is a clean operation; a colostomy is dirty, an annoyance to the patient and to the whole ward. If, however, the distension is great and the intestinal walls sodden the



CASE 6. No. 9.
Paul's tubes in position.

mechanical difficulty in doing any anastomosis is great and the puncture of such a loop of bowel hazardous. A temporary anastomosis possesses another very great and obvious advantage. It leaves the abdominal wall clean, therefore the second operation to be undertaken for the removal of the growth, one of greater safety. The delivery of the growth and the opening of the proximal gut is very safe, but the illness is much prolonged. The Mikulicz anastomosis clamp is satisfactory: it gives a good and safe result, but the external opening is slow in closing. Paul's operation, I believe, has not received the attention it merits. It is safe, clean, and in suitable cases to be commended. I have used the tubes in a recent case of unremovable carcinoma of the rectum with very satisfactory results.

Another point is that malignant disease of the intestines is not such a hopeless one as may have appeared. It is a slow disease, and once thoroughly removed, the results, I believe, will compare favourably with those obtained in malignant disease in other situations where operative treatment is more readily resorted to. A history of mucous discharge from the rectum indicating the presence of colitis or of bleeding, indicating that the growth was breaking down, were not present. They are late symptoms and are given undue importance in many textbooks.

Now, gentlemen, while I am aware that I have not been able to bring before you any new methods, I hope that in drawing your attention to the important subject of intestinal obstruction I have suggested a line of thought and provoked a discussion that may clarify and classify our ideas, so that we may have a clearer understanding of this important group of cases.

The third international congress of Electro-therapeutics and Radiology will be held in Milan, from the 5th to 9th September, 1906. The General Secretary is Prof. Doumer, of Lille.

We welcome the first number of *Le Journal de Médecine et de Chirurgie*, a new monthly journal published in Montreal. The editor is Dr. W. I. Derome, whose collaboration we have had for two years; and the directors also include Drs. Monod, de Martigny and Masson. The quality and tone of the first number leave nothing to be desired.

The *Queen's Medical Quarterly*, published by the medical faculty of Queen's University, Kingston, contains a strong plea in favour of a public grant in aid of medical education in Kingston. This is based upon the fact that a large sum has recently been granted to promote medical education in Toronto. As this is a departure from the educational policy of the past, the Faculty of Queen's naturally ask for proportionate consideration for what has been done in Kingston for the past fifty years.



Before operation.



Ten months after operation.

The photograph illustrating the condition before operation in the case of Dr. Gray and Dr. Archibald, "Syphilitic Necrosis of the Frontal Bone," published in the last issue, was omitted. Those printed represented the condition immediately after, and again ten months after operation. The mistake is here rectified.

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No. 2.

RECENT WORK ON THE HEART.

We have in our possession a dissertation written some twenty-five years ago upon the subject of "Physiological Diagnosis as a Basis for Rational Therapy." This title has always seemed to us a peculiarly suggestive one. It might well be adopted as the watchword of a certain school of clinical workers who are to-day reaping golden harvests in the field of disorders of the heart.

Ten years ago it was the commonly accepted view that the rhythm and activity of the heart in higher animals was to be referred to the ganglion cells found especially in the great veins and auricles. Now a great many physiologists and some of the most active clinical men are accepting the contrary views of Gaskell and Engelmann, who claim that the cardiac muscle fibres possess all the properties necessary to develop, conduct and execute the rhythmic contraction of the heart.

They do not minimise the great importance of the nerve impulses reaching the heart by the cardiac nerves, but they regard these impulses as accelerating or inhibiting processes already in operation and not, as many others still believe, initiating activities which could not otherwise be developed.

Engelmann attributes four functions to the heart muscle, as follows:

1. The production of a stimulus adequate to initiate a contraction.
 2. An excitability through which this stimulus may become operative.
 3. A power of conduction by which it may be carried from one part of the heart to another.
 4. The power to contract.
- To these Gaskell adds a condition of tone as a fifth property or function.

Engelmann has shown in the frog that the four functions which he ascribes to the heart muscles are to a great extent independent of one another. The conductivity of the heart may vary; apart from the excitability, and the contractive power may increase or decrease without any change taking place in the production of the essential stimulus. He has published tracings from experiments performed on the heart where one or other of these functions has alone undergone a change. He claims too that each function may be independently affected by outside influences reaching the heart by the nerves. He gives names to these influences according to the function they affect and it seems that his terms are being accepted by English writers. They are as follows: Influences that affect the production of the motor stimulus are called "chronotropic." If they accelerate the stimulus production and thus quicken the rate of the heart they are called "positive chronotropic," if the reverse, "negative chronotropic." Similarly we have positive and negative "dromotropic" influences affecting the conducting power, "bathmotropic" influences affecting the excitability, and "inotropic" the contractility.

This may all seem very theoretical, but it has been put to the test of clinical application and has not been found wanting. A book on "Arrhythmia of the Heart," by Dr. K. F. Wenkenbach, professor of medicine at Groningen, has recently been translated into English, and in it he demonstrates that in great numbers of human pulse tracings he found it possible to decide which of the four functions was at fault in causing the arrhythmia.

In England the work has been taken up by James Mackenzie who, by means of his simultaneous tracings of venous and arterial pulses, has added very much to our knowledge of the irregular heart action and its relations to the four cardinal functions. He can allot to the auricles and ventricles respectively their parts in the production of the arrhythmia, and can measure the time elapsing between the auricular

and ventricular systoles and thence judge of the conducting power. He points out that while some cases of bradycardia are chronotropic in origin, others depend upon affections of conductivity. In cases of tachycardia we may have either the stimulus production or the excitability at fault. Pulsus alternans is found to depend upon a failure in contractive power, and this function seems to be the one most affected in cases of angina pectoris. The actions of various drugs have been analyzed with reference to the special functions affected by them.

It seems, indeed, that these new views on heart physiology have opened up the way for very important advances in our knowledge of arrhythmia and of heart disease generally.

THE PHYSIOLOGY OF THE VOICE.

At a recent meeting of the Medico-Chirurgical Society Professor Wesley Mills gave some forecast of the work upon which he is engaged in connexion with the physiology and hygiene of the voice. His address was illustrated by the violin, by various pieces of apparatus and by the speaking and singing voice. Dr. Mills expects to have the work completed within the next two months; and, in the meantime, we may be permitted to give some indication of its scope.

The same principles apply to the use of the voice in singing and speaking. The following are concerned in all voice productions: the respiratory apparatus which furnishes the mechanism and the power that drives the rest of the machinery; the larynx which is acted upon by this; and the resonance chambers which respond. Tones are ultimately due to the vibration of the air within the resonance chambers, brought about through the action of the mechanism below them.

The pitch of the tone was formerly supposed to correspond exactly with the rate of vibrations of the vocal bands. It seems more probable that pitch, as well as quality, is determined by the resonance chambers, the vocal bands not necessarily vibrating at a rate corresponding to the pitch of the tone produced, though the air in the resonance chambers must do so. In strictness the resonance chambers are not really resonance cavities.

The expiratory blast is the effective cause of the vibration of the vocal cords. It is to them what the bow is to the violin, while the action of the laryngeal muscles determines the position and tension of the vocal bands.

The total result—the formation of a tone of a definite pitch, quality and loudness, may be said to be due to the harmonious co-operation

of the three sets of mechanism referred to above. Though simple in statement this co-ordination is of a highly complex character, involving the simultaneous contraction, and relaxation, of many muscles, and the use of widely separated areas of the nervous system which are brought into united action by association fibres.

The difference in speaking and singing is one of degree—chiefly in the range and the duration of the sounds produced. The quality of a sound is dependent on the shape of the resonance chambers. Vowels differ chiefly in quality, but also in pitch. Consonants are due to interruptions in the breath stream—produced in a variety of ways—made by a certain position and action of the organs of speech. In whispering the vocal bands take little or no part. Consonants are absolutely necessary for speech and may be compared to punctuation of a higher order. For purposes of singing they are a nuisance.

Breathing is of the utmost importance in both singing and speaking. All modes of dress that interfere with it should from this point of view, and from a still higher one—the general welfare of the body—be done away with. Corsets are especially to be condemned. In singing or speaking one should be unconscious of his larynx at any time. Singing and speaking in which the reverse is the case is by a wrong method. The important consciously guiding sensations come from the resonance chambers chiefly.

The common errors in speech of the day are referable largely to faulty or inadequate action, in either the back or the front of the mouth cavity. Nasal resonance is important, but nasality is an abomination due to a faulty behaviour of tongue or soft palate, usually both. Defective articulation is due chiefly to an indolent action of the tongue.

Behind these physical defects are psychic ones. What people wish to accomplish they generally do accomplish. Persons rarely aim at a good result in speaking unless it appeals to them aesthetically and intellectually. Indifference is the chief cause of the imperfections and faults which characterize our speech. It is no great stigma to even an educated person in America to fail in elegance of speech, though grammatical accuracy is demanded. The age of poetry and eloquence is largely past hence high class utterance is not valued. The best age of vocalization was that of the old Italian Masters—the time of Handel, of 150 to 200 years ago. Then the composer was often obliged to write to please the recognized singers of the day. We have gone to the other extreme and the composer is often ignorant of the voice and writes what is sometimes impossible of perfect production.

The change in the thought of the day has led to a comparative under-

valuation of technically fine vocalization, and beautiful tones, produced with ease by the singer, and delight to an unspoiled nature, and a really discriminating ear. Much that passes for singing to-day might be termed elocution in song—good in conception, but defective as vocalization. This is due to alteration in the public mind which has grown so dissatisfied with what is simple, however beautiful, and demands the complex, the involved, the subtle. As is the modern novel to one of Dickens or Scott, so is the modern song to one of Handel, Hayden or Mozart.

The factor that has most of all contributed to the decay of pure and beautiful sound production in speech and song, is modern rush. The pupil wishes to learn to sing, but is willing to give only months to accomplish an end, to which formerly the student devoted years. He is unwilling to train. He wishes only to furnish the completed performance, and that after imperfect preparation.

It is against all laws of physiology and psychology to believe this possible. Such attempts are apt to be followed by injury to the vocal organs and must lead with all the other causes to a degradation of vocal and musical art, and such has actually taken place.

The troubles from which singers and speakers suffer are usually traceable to bad methods of voice production which induce congestion and its consequences.

ON THE COMPOUND TINCTURE OF VIPERS.

Of late the chief food inspector and the customs officials have been perplexed, and the Montreal papers have made merry over the case of Lum Kan, launderer, and the three carboys of wine which had been consigned to him, the wine upon examination being found to contain the dressed bodies of sundry beasts that go upon their bellies, together with certain herbs which the City analyst could not seem to have assigned to their respective genera. The wine in the cup looked good, and was of pleasant savour: "Why," communed the food inspector, "defile it with these noxious reptiles? Can that be to any proper end? Vipers are venomous. This matter must be probed."

And so the wine was analysed, the consignee interrogated, and, last stage of all, the quandary, and the carboys, brought before the Health Committee; and these, despite the solemn declaration of Lum Kan, duly attested, that he was accustomed to partake of this wine containing snakes, lizards and herbs, prepared in China, as a remedy for rheumatism, that he had complete confidence in its efficacy, and that he

had procured it for his own use and not for sale, the aldermen were yet mistrustful. There are, it is evident, limits to what an alderman will consume—and when a sample glass was passed round the board, cheerful as was its appearance, and ethereal as was its odour, not one would taste the celestial beverage.

But the burden of the comment aroused by this incident has undoubtedly been “those strange Celestials”; and this tincture of snakes as a remedy for rheumatism has been docketed along with puppy dogs, unhatched ducks, and bird-nest soup, whereas the strangeness lies in our forgetfulness.

Judged by the description, the Chinese wine is a far more “elegant preparation” than were a host of the medicines taken uncomplainedly by our forefathers of a few generations ago. It is only that the orientals are some few years behind us—and they are rapidly catching up—and that they are more conservative. As a matter of fact, various preparations of vipers held a place of respect among our eighteenth century drugs. Nay, according to the paradox principles which have dominated pharmacology even up to our own day of grace and of enlightenment—and that not entirely without some show of reason—the very noxious characters of these bodies singled them as being more than ordinarily virtuous; that principle assured their presence in the Pharmacopœia.

We happened some little time ago upon the fourth edition of Dr. John Quincy’s “Compleat English Dispensatory,” published in London in the year 1722, and made a note of some of the more abominable, or, to be liberal minded, more repugnant, inventions therein set forth. Dr. Quincy evidently held the same opinion of his task as set forth by the compilers of the last edition of the United States Pharmacopœia: that it was his duty to afford a description of not merely those medicines which he believed to be sound and serviceable, but of all those for which there was a general demand. Thus he writes of *Sperma Ranarum* (frogs spawn) that “there is only a simple water made of it which stands in the account of some for many good purposes: but it’s an insipid phlegm and good for nothing more than common rain water,” and of “*Urina Hominis*,” that “Some have got a notion of this being good for scurvy and drink their own water for that reason: but I cannot see with what reason.” And he adds: “Some commend it boiled into the consistency of Honey, for Rheumatick Pains, rubbing it into the Parts affected: in which case it may do good because it cannot but be very penetrating.” Here, perchance the doctor confounded an accidental with its proper action—the odour, that is liberated by it

in the process of being boiled down is beyond measure penetrating, as the Reverend the professor of astronomy in one of the older English Universities discovered, when the lecturer on physiology in the chamber adjoining, proceeded to make a lengthy investigation into urinary pigments and incidentally to enlarge his laboratory space by annexing the room assigned by the University to the professor. Of other equally repugnant remedies he gives "*Urina vaccae*" ("Some drink this as a purge. It will operate violently". *Fimus vaccae* ("This seems to be of a hot, penetrating nature, and is experienced to do good in Erysipelatous swellings.") We still hear of cow dung being used in country districts and used as Quiney recommends it: "with a mixture of enough of some unctions (*sic*) matter to prevent its hardening upon the Part"). *Album graecum* ("This is the white dung of some dogs; it is reckon'd to have a detersive quality, but upon that foot is used only by the common people"). He had a higher opinion of *Fimus Columbae*: "This is sometimes ordered in Cataplasms, applied to the soles of the feet in Malignant Fevers and Delirium, as they are supposed to draw the Humours downwards; which may not be ill guessed. For, if we may judge of the nature of this from that of the bird of which it is produced, which is no ill Rule, it certainly consists of subtile hot parts, which open the Pores where it is apply'd and by rarefying and expanding them, occasions a greater Flux or Fluid that way." We are inclined to think that in these sentiments Dr. Quiney traduced the gentle dove.

Of preparations from the snake he affords no less than four, to wit: Sal Viperarum Volatile, Essentia Viperarum, Oleum Aethereum Viperarum ("which is sudorific and a specific in venomous bites") and Tinctura Viperarum Composita. And he gives instructions how they are to be prepared which may be of some present interest. Thus, first as to the *Distillation of Vipers*: "Take any number of vipers, open and clean them from all worms and excrements, and the Females from their Eggs: Take out their Hearts and Livers, dry them in the shade separately from their Bodies; and when they are dry, cut the Bodies into small pieces, and fill a coated Retort three-quarters full; place it in a fit Reverberatory, lute to it its Receiver which must be large; cover the surface with its Dome and make a gentle Fire under it for two hours, in which time the greatest part of the Phlegm will come over; then increase the Fire to the second degree for two hours more, which will raise its Spirit and Volatile Salt; increase it still to the third, which will fill the Recipient with Clouds; Keep up that degree

till the Clouds lessen in the Receiver; continue the increase of the Fire still to the Fourth degree, and keep it there till all be come over, and the Receiver grows cool; then cease the Fire and there will be a Phlegm, Spirit, Salt, and Oil which must be rectify'd."

The compound tincture consists of the distillate from 1 lb. of Flowers of Sulphur and 4 oz. of crude antimony saturated with oil of sulphur or oil of vitriol, 4 ozs., to which has been added gradually 1 lb. of sweet spirit of nitre. To 1 lb. of this distillate is added 2 ozs. of dried vipers cut into small pieces; the mixture is digested in a matrass for 48 hours, strained, and has added to it cochineal, saffron and (with a proper appreciation of the doctrine of signatures) Virginia Snake root *ana* 2 ozs. The clear tincture is decanted off after 48 hours. This is said to be an excellent Diaphoretick—which we can well believe—its dose from 10 to 50 or 60 drops of Canary or phlegm water.

But, we repeat, the celestial tincture appears from the description given to be the more elegant preparation, particularly if Lum Kan, launderer, can contemplate making away with three carboys, and our opinion, we venture, will be confirmed by any chemist who tries to distil together those first ingredients.

To conclude, we would urge that it is the part of the man of broad mind and serene to survey compassionately therapeutic vagaries, ancient as well as modern, oriental equally with occidental.

The *British Medical Journal*, with the first number of 1906, appears in a new dress, with a tinted cover and a medallion of the founder. The paper is of a much better quality and the colour photographs are admirable. This journal holds a strong place in the affection of the profession, and it is likely to be stimulated by the approaching meeting in Toronto.

The Canadian Medical Protective Association has sent out the last call for subscriptions. The fee is now three dollars, instead of two-and-a-half, which, the council thinks, is more convenient to remit than the smaller amount. At the Halifax meeting it was ruled that the membership be made permanent, and that collections may be made through the banks if remittances are not sent.

Reviews and Notices of Books.

MANUAL OF PHYSIOLOGY, WITH PRACTICAL EXERCISES. By G. N. STEWART, M.A., D.Sc., Professor of Physiology, University of Chicago. London: Ballière, Tindall & Cox, 1906; Toronto: J. A. Carveth Co.

The present is the 5th edition of this book since the year 1906, a fact which alone testifies to its popularity, and though the latter does not in all cases correspond with real value in a text-book for students it may be considered to do so in this case. The whole ground of physiology has been covered within somewhat less than 900 pages of readable print, in which one recognizes the use of a larger and a smaller type, the more elaborate discussions and those on points somewhat unsettled being especially dealt with in the smaller print. The author makes use of italics in the main body of the text with which to set forth the principal conclusions of important discussions, a plan which is excellent and too little followed in text-books, though coming more and more into vogue in original papers in various departments of science. The work is illustrated by 400 cuts in the text and a few coloured plates, the one which appears opposite the title page being of especial excellence. Dr. Stewart has also followed a course which is unusual in that he has introduced directions for laboratory exercises into the body of his work. These do not occupy a great deal of space, they are all founded on actual experience and have been well tested by the author. They will undoubtedly serve a good purpose for teachers, may be very valuable to the private student and at least prove suggestive for the ordinary reader. That they will in their entirety be followed by many classes is more doubtful. This work does not pretend to teach or specially illustrate the minute structure of tissues. As to whether so complete an omission of the histological is wise in a work intended for the average medical student, seems a little doubtful. However, there is more division of labour and specialization in medical teaching now than at any previous time and much can be said for Professor Stewart's course. Something must be omitted in every work, and it certainly was wiser to leave out histology altogether than to make the physiological treatment superficial or inadequate in any respect.

The author informs us that in this edition in the chapters on Blood, Digestion, and the Central Nervous System, there has been considerable addition to the matter of previous ones; still the bulk of the volume has not been materially increased owing to the adoption of the different

forms of type referred to above. The whole work impresses one with the conviction that the author was unusually well fitted not only by an adequate knowledge of physiology but by experience in teaching and writing, to construct a text-book for students, and indeed for all who wish a sound and thorough knowledge of modern physiology. It certainly is not a book for babes and sucklings, for in this more than in many works have the technique and experimental been brought to the front, and this will not make easy reading to a great many who wish to get some knowledge of physiology; but to the student who has the opportunity of doing laboratory work, as indeed this book presupposes, these will not seem such difficulties or bugbears as they were to a large proportion of students of medicine at the date of the appearance of the first edition of this book. Nevertheless, we cannot but believe that the work might have been possibly more useful, certainly accessible to a larger number, if the technical had been a little less prominent. The medical student is rather one who must be provided with physiology in such form as he can comprehend clearly and apply readily than with that technical and extensive knowledge demanded of the specialist in physiology, or of one pursuing a purely scientific career. But there is room for many kinds of books and about the value of Dr. Stewart's there can be no question. All who can read it, digest it, and apply it will have a good hold upon the science of physiology. The practitioner, or more advanced student, who was perhaps furnished with a less nutritious diet in his undergraduate days may, by means of this book of moderate size, ascertain sufficiently well what is the present *status* of physiological knowledge in any department. It is an exceedingly well balanced book. It does not represent the physiology of any one school or laboratory or the fads of any individual writer, and so far as we have observed it has no peculiar defects or weaknesses of any importance, though it has many and great merits. We sincerely wish it the success it deserves.

W. M.

PARK'S PATHOGENIC MICRO-ORGANISMS. By WILLIAM HALLOCK PARK. M.D., Professor of Bacteriology and Hygiene, Bellevue Hospital Medical College, Director of Research Laboratory, Department of Health, New York. New (2nd) edition, enlarged and thoroughly revised. 556 pages, with 165 engravings and 4 full page plates. Cloth, \$3.75, net. Lea Brothers & Co., Philadelphia and New York.

We congratulate Dr. Park upon the fact that in this new edition

he has determined not to be a slave of the word and has made his text-book of Bacteriology for medical students not one description of pathogenic bacteria only, but has widened its scope so that pathogenic microbes in general are included, whether of vegetable or animal nature. However much we may lament the misuse of terms in one science—and such misuse is painfully widespread—utility must dominate correct usage. Already for long years the works on bacteriology have contained chapters upon the pathogenic moulds and yeasts, which assuredly are not bacteria. Their study forms no separate science. So it is with the protozoan microparasites; they have to be studied by the student by the same methods, the problems they introduce are identical; to leave them out of the text-books is pedantic. We have always liked this work of Dr. Park's. We like it still better in this improved form. With no particular grace of style it is nevertheless direct and practical, as might be expected from the author's position in connection with the New York Board of Health and his valuable series of studies upon the infections and anti-toxines, it is more particularly authoritative whenever it touches upon practical methods of applying bacteriology to diagnosis and treatment of infectious diseases. The newly introduced chapters upon the pathogenic protozoa are singularly clear and concise.

J. G. A.

LEFEVRE'S DIAGNOSIS. By EGBERT LEFEVRE, M.D., Professor of Clinical Medicine and Therapeutics in the University and Bellevue Hospital Medical College, New York. New (2nd) edition, revised and enlarged. In 479 pages, with 102 engravings and 6 full page plates. Cloth, \$2.25, net. Lea Brothers & Co., Philadelphia and New York.

The second edition of this book introduces a number of changes and emendations; the illustrations are in many cases very useful, and there is a fairly representative lot of radiographs shown chiefly with regard to diseases of the lungs. A good point about the whole book is the stress that is laid upon observations by eye and hand, and the skin-pencil is used throughout very effectively; all this means that the student is learning his science from the patient and not from the text-book.

QUIZ COMPENDS; Blakiston's: Medical Chemistry, Inorganic and Organic, Urinalysis. By HENRY LEFFMAN, A.M., M.D. 5th edition.

This book of 200 pages contains much information attractively presented.

BLAKISTON'S QUIZ COMPENDS; A Compend of Diseases of the Skin.

By JAY F. SCHAMBERG, A.B., M.D., Professor of Diseases of the Skin, Philadelphia Polyclinic. Pages, 298; illust., 108. 4th edition. P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1905.

The fourth edition of this little hand-book does not appear to differ radically from its predecessors. Some additions on X-ray treatment are made.

CLINICAL AND PATHOLOGICAL PAPERS, from the Lakeside Hospital, Cleveland. Series II., 1905.

This consists of 40 papers, clinical, experimental and pathological, which have been published elsewhere, but are here collected to give evidence of the scientific activity of the hospital.

A MANUAL OF DISEASES OF INFANTS AND CHILDREN. By JOHN RUHRAH, M.D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore. 404 pages, fully illustrated. Philadelphia and London: W. B. Saunders & Company, 1905. Flexible leather, \$2.00, net. Canadian Agents: J. A. Carveth & Co., Toronto.

Dr. Ruhräh's book is a compact volume which appears to be a well conducted and sifted product of one of the large text-books upon the subject, and this is exactly what the author has set himself to do. It is essentially a student's book, for each individual subject is so briefly considered that it can scarcely be more than an outline. A useful chapter is one devoted entirely to therapeutics and prescriptions, with some general common sense rules about the treatment of children by medicines.

SAUNDER'S QUESTION COMPENDS; Essentials of Materia Medica and Therapeutics. By HENRY MORRIS, M.D. Seventh revised edition, adapted to the new (1905) pharmacopeia.

This work is no exception to all the other numbers of this excellent series of compends. Dr. Bastedo, in revising the book for this seventh edition, has brought it in accord with the new (1905) Pharmacopeia, introducing all the new remedies and carefully indicating their therapeutic doses and uses.

DOSE-BOOK AND MANUAL OF PRESCRIPTION-WRITING. By E. Q. THORNTON, M.D., Jefferson Medical College. Third Edition, revised and enlarged; 392 pages, illustrated. Philadelphia and London: W. B. Saunders & Company, 1905. J. A. Carveth & Co., Toronto. \$2.00 net.

For the saving remnant of the profession which still writes prescriptions this book is invaluable. It contains all which is known of the too-much despised art of prescription-writing. The metric system receives equal prominence with the established usage. The book is intended primarily for students, but there are many graduates who would be improved by consulting its pages.

MAN AND HIS POISONS. By ALBERT ABRAMS, A.M., M.D., Consulting Physician, Denver National Hospital. Illustrated. E. B. Treat & Company, New York. Price, \$1.50.

Dr. Abrams will be remembered as the author of "The Blues," a book about which we were not over enthusiastic when it appeared. Too much stress need not be laid upon the scientific quality of this book either, though it is difficult to avoid comparison with Bouchard's "Auto-intoxication." Yet it is full of character, wise saws, and acute reflections.

LECTURES ON ANTI-INTOXICATION IN DISEASE. By CH. BOUCHARD, Professor of Pathology and Therapeutics, Paris. Translated, with a preface and new chapters added, by THOMAS OLIVER, M.A., M.D., F.R.C.P., Professor of Physiology, University of Durham. Second revised edition. Price, \$2.00, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia.

The first edition of this book appeared in 1894, and the present reviewer still remembers the pleasure with which he read it a dozen years ago. Such books were rarer then than now. The text remains practically the same, but Dr. Oliver, by his additions and scholarly preface, has brought the book up to date. This book remains one of the most fascinating monographs in modern medicine.

The new Asylum for epileptics at Woodstock has been formally handed over to the government by the contractors. The asylum consists of two cottages and an administration building with accommodation for seventy patients. Dr. J. J. Williams, of Lisle, is to be superintendent.

Medical News.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The Montreal Medico-Chirurgical Society has arranged the following programme for the remainder of the Session:

February 2nd: Pancreatitis from a surgical point of view, with reports of some cases. J. M. Elder.

February 16th: A cure for tuberculosis. Geo. A. Brown.

March 2nd: Osteomyelitis, with special reference to treatment. A. E. Garrow. Subacute blepharo—conjunctivitis. F. J. Tooke.

March 16th: Two years' travel and medical research on the Congo. J. L. Todd (Liverpool School of Tropical Medicine).

April 6th: Pulmonary gangrene and abscess. Ridley MacKenzie, Geo. E. Armstrong.

April 20th: Latent organic disease of the stomach. C. F. Martin.

May 4th: An epitome of one year's work in the Neurological Department, Montreal General Hospital. D. A. Shirres.

May 18th: Remarks on the weak foot, commonly known as flat foot, with especial reference to the principles of curative treatment. Royal Whitman (Medical Department, Columbia University, New York).

June 1st: The outdoor treatment of tuberculosis, illustrated by lantern slides. A. J. Richer.

June 15th: Skin lesions of tertiary syphilis. G. Gordon Campbell.

ROYAL VICTORIA HOSPITAL.

The annual meeting of the Royal Victoria Hospital was held on the 16th January, 1906. During the year 3,093 patients were treated, an increase of 39 over the previous year.

Of the total number, 1,729 were Protestants, 1,118 Roman Catholics, 211 Hebrews, and 35 of other faiths. The free patients numbered 1,631. The total days of hospital treatment aggregated 71,194, as against 74,777 in the preceding year, a decrease of 3,583 days.

On January 1, 1905, there were 174 patients in the hospital remaining from 1904, and during the year 3,085 were discharged, of whom 1,348 were well, 1,098 improved, 184 not improved, 278 not treated, and 182 died. There remained in hospital on December 31, 1905, 180 patients. Of the 182 deaths, 57 took place within 48 hours of admission. The

death rate for the year was 5.89 per cent., or, deducting those dying within 48 hours of admission, 4.05 per cent.

The highest number of patients in the hospital on any one day was 219, on February 24, and the lowest was 166, on July 18. The highest monthly average was 212, in February; and the lowest 178, in July. The daily average for the year was 195, as against 205 for the previous year.

During the twelve years that the hospital has been in existence 29,682 patients have been admitted to the wards for treatment.

In the out-patient department the total number treated last year was 3,830. The number of visits of these patients aggregated 24,872; Medical, 8,587; surgical, 4,988; eye and ear, 4,524; nose and throat, 5,633; disease of women, 1,140.

The income for the year was \$160,591, while the ordinary expenditure amounted to \$124,547, the balance of \$36,042 being applied in reduction of the indebtedness incurred by the new buildings and other additions.

The total cost per day patient was \$1.74; the cost per day of maintaining each person in the hospital—staff, servants, all employees and patients—being 82 cents, and the daily cost of provisions for each person, 23 cents.

Dr. J. W. Stirling was appointed ophthalmologist to the hospital, in succession to the late Dr. Buller.

The following appointments were made to the medical staff:

Associates in medicine—Drs. Fry, Cushing and McCrae.

Clinical assistants in medicine—Drs. Burnett, McAuley and Russell.

Clinical assistants in neurology—Drs. Robinson, Robins and Russell.

Clinical assistant in ophthalmology—Dr. Tooke.

Clinical assistant in gynæcology—Dr. Goodall.

Clinical assistant in laryngology—Dr. Hamilton White.

Registrar—Dr. Cushing.

Assistant registrar—Dr. McAuley.

House pathologist—Dr. Klotz.

Assistant in X-ray department—Dr. Cram.

WESTERN HOSPITAL.

The thirty-third annual meeting of the Western Hospital was held January 16th, 1906. The number of patients treated during the year was 524; and the number of consultations in the out-door department was 6,698. In order to provide urgently needed accommodation, the

Board of Governors had decided to proceed at once with the erection of one wing of the new building, sufficient to accommodate 100 beds.

The treasurer reported total receipts of \$21,405.58. The payments—including \$2,752, outstanding accounts for 1904, the previous year—totalled \$15,541.50.

The lady-superintendent reported that the number of nurses was 16. Ninety-six applications for admission to the training school had been received; 15 probationers had been admitted; and 5 had finally been selected to act as pupil nurses. Eleven nurses had passed the necessary examinations, and been awarded diplomas and medals.

The Medical Board reported the following resignations from the staff: Dr. Andrew Macphail pathologist; Dr. Grace Ritchie-England, assistant gynæcologist; Dr. J. Leslie Foley, dermatologist.

Dr. A. G. Nichols was appointed to succeed Dr. Macphail as pathologist, Dr. C. C. Gurd and Dr. L. Gilday were appointed assistant gynæcologists.

In regard to the new wing, the chairman said that the subscriptions up to December 31st last, amounted to \$13,395; to which had since been added \$500. The sum of \$8,745—increased by interest account to \$8,769—had been paid in; \$8,502 had been paid out; and \$267 remained on hand. The total subscription account at the present time amounted to \$13,895. He estimated that the new building, with complete equipment would cost about \$65,000.

The following officers were elected:

Honorary president, R. Hersey; president, Mr. Charles F. Smith; 1st vice-president, Mr. Peter Lyall; 2nd vice-president, Mr. D. K. McLaren; treasurer, Mr. H. A. Hodgson; secretary, Dr. George T. Ross.

Committee of management—Messrs. Stearns, J. Pitblado, B. A. Boas, P. W. McLaren, Thos. Gilday, A. P. Willis, C. W. Davis, James A. Ogilvy, Jr., W. H. Trenholme, F. Robertson, J. C. King, J. T. McCall, Robert Bickerdike, Charles Gurd and John Murphy.

The sixth annual meeting of the Canadian Association for the Prevention of Consumption and Other Forms of Tuberculosis will be held in the Railway Committee room of the House of Commons on the 28th of March, 1906. In the evening a public lecture will be delivered in the lecture hall of the Normal School by Dr. Arthur J. Richer, of Montreal, which will be illustrated with stereopticon plates, showing the stages of consumption and some of the appliances now in use to check and cure the disease. The chair will be taken in the evening by His Excellency Earl Grey.

At the annual meeting of the Toronto Free Hospital for Consumptives, it was stated that 136 patients in the advanced stages of tuberculosis had been cared for, during the year. An addition has been built at a cost of \$20,000, which will soon be ready for occupation; a further sum of \$15,000 is on hand to build a hospital for paying patients in the advanced stages of the disease.

Dr. Orlando S. Strange died in Kingston on January 2nd. He was the oldest physician in Kingston and had practiced for fifty years, retiring some years ago.

Dr. Joseph Carbert died in Toronto, on January 2nd, in his 80th year. He had practiced in Orangeville for many years.

Dr. Silas P. Emes, a graduate of Victoria College, Cobourg, died at Niagara Falls, on December 25th, aged 67. He had been in practice at Drayton, Ont. He was a surgeon of the Grand Trunk Railway, and was coroner of Welland County.

Dr. Robert Mitchell, of Amherst, N.S., died on December 27th, of pneumonia. He was a graduate of Edinburgh. He practiced in Wallace, N.S., Dorchester, N.B., and finally at Amherst, N.S.

Dr. A. H. Cooke, who formerly practiced at Mt. Pleasant, Ont., died on January 10th, at Chicago.

Dr. Fred. Lapsley, a graduate of Toronto University, died on January 6th, at Chicago, aged 37 years.

Dr. Wm. Armstrong died in Toronto, on January 11th, in his 79th year. He lived in Orangeville, and afterwards in Toronto.

Dr. W. A. Comfort, of Beamsville, Ont., died on December 20th, at Campden, Ont., aged 83 years.

Dr. W. J. Arnott, of Berlin, died on December 12th, of meningitis. He was a graduate of Trinity College, Toronto, and was 43 years of age.

Dr. A. L. Jukes died on December 3rd, at Vancouver, in his 85th year. He was born in India, was at one time senior surgeon of the North-west Mounted Police, and since 1894 has lived in retirement. He was a Fellow of the Royal Obstetrical Society of England.

Dr. J. H. McFaul died at Toronto, on December 23rd, of angina pectoris. He was a native of Ontario, a graduate of Trinity College, and practiced medicine in Toronto since 1888. He was 66 years of age.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

J. HOGARTH PRINGLE, M.B., Edin., F.R.C.S., Eng. "Bier's Osteoplastic Amputation." *Lancet*, November 18th, 1905.

The evolution of this operation, which is quite a different procedure from that of Pirogoff and Gritti, has been a gradual one. The first step was the idea of forming an artificial foot for the purpose of taking the weight. Having amputated the limb, he took out a wedge higher up, involving the whole thickness of the bone, and turned up the distal segment of bone which was then fixed at right angles to the remainder and projected forwards beyond it, so as to form a support something like a miniature foot. Latterly he shortened the piece of bone to be turned up so it merely covered the end of the proximal segment. The present modified operation first appeared in 1897. A flap of skin and subcutaneous tissue is cut from the antero-internal aspect of the limb and reflected with care that there is no damage to the periosteum covering the skin surface of the tibia. Next, three sides of a rectangular flap of periosteum are cut on the skin surface of the tibia, the two lateral incisions being made just beyond the margins of this surface of the bone, and the transverse incision about one and a half inches down from the base of the skin flap. With an elevator the periosteum is raised for about one-third of an inch upwards from the transverse incision, and then a fine saw is applied and a thin flap of bone, still adherent to the periosteum, is cut from the compact bone of the shin surface. It may consist of the whole thickness of the compact layer. Its length must be equal to the transverse diameter of the tibia, and may be made long enough to cover the fibula end as well. The base of the bone flap is then snapped through, but the periosteal bridge connecting it to the bone of the stump must be most carefully preserved. After the bones are sawn across, the bone flap is sutured by the margin of its periosteal covering to the edge of the periosteum of the bone of the stump and to the muscles of the stump also, so that it is held closely to the sawn end of the tibia. The results are illustrated by accompanying skiograms. The writer has performed this amputation 15 times on the bones of the leg, 6 times on the femur, on the humerus twice, and once through the forearm. In the leg and femur and humerus the results have been very good, in the forearm

pronation and supination were quite arrested. This result is not so disadvantageous as would at first appear because rotation takes place, so freely at the shoulder that the patient found no inconvenience. The reasons set forth for this method of amputating in children as being conducive against the development of conical stump are given and are worthy of consideration. The advantages claimed for this operation are that it allows the patient to bear his full weight upon the end of the stump, that by so doing better power of locomotion is secured, and that this renders atrophy of the muscles less likely to occur. In the writer's opinion, it ought to be the operation of choice in all cases when there is a reasonable chance of avoiding infection.

G. LENTHAL CHEATLE, C.B., F.R.C.S. "The Spread of Cancer in the Tongue, and its Influence on Treatment." *The Practitioner*, November, 1905.

The paper deals only with the extension of the disease in the tongue itself, not with the deposits in the lymphatic glands and elsewhere.

For active surgical purposes, cases of cancer of the tongue can be divided into three classes, the early case in which there is little disease, the advanced case but presumably operable, and the inoperable case. In all, 19 cases were operated upon, and examination of the tissues removed and post-mortem findings in three of the cases form the basis for the conclusions drawn. Whitehead's operation was performed on all the cases, they all belonged to the second class of case, and the cancer process began on the side or centre of the tongue, in its anterior two-thirds in all of them, except one, where it began on the under surface of the tip, at the junction of the frænum linguæ with the tongue, and early spread to the floor of the mouth. Regarding the superficial spread of cancer in the tongue, the writer believes that mechanical, lymphatic and vascular areas play quite a secondary part in the spread and limitation of the disease, and that the primary growth spreads in the muscles rather than in fascial planes which separate them. Ulceration is regarded as being due to simple atrophy caused by the pressure of the growing tumour beneath the mucous membrane rather than to actual extension of the disease. The limitation of the disease to the median line, which is frequently observed, is explained in the same way as the limitation of growth in rodent ulcer, that it becomes at least temporarily, arrested at neighbouring nerve areas and in denervated areas, which also explains the escape of the tip in these cases. This limitation, however, may be only apparent, for with it we may have deep infiltration of the apparently unaffected side, as is shown in one illustra-

tion. Regarding the deep spread, it takes place in the muscles and fascial planes. These points are well illustrated by 13 sections with explanatory notes. The point of chief practical importance, which these data teach, is that the tongue, for surgical purposes, must include its extrinsic muscles, and not merely these parts of them covered by mucous membrane in the mouth. This point is shown by the finding of secondary deposits in the stumps of the hyoglossus muscle, the inferior lingualis muscle, and the fascia covering the genio-hyoid muscle. It would appear, therefore, that Whitehead's method of excision is quite inadequate for the presumably operable class of cases.

When the disease has spread to the dorsal surface, at, or near the centre in its anterior two-thirds, the hyoglossus, the geniohyoglossus muscles, particularly its genio-glossal fibres and the inferior lingualis muscle, are cancer-bearing on both sides, and their total removal is the best chance of success. When the disease has begun, and is still undoubtedly quite at one side, and does not approach the middle line, then excision of half the tongue and of its muscles should be attempted, but the writer believes these cases to be very uncommon in the class of case under consideration. He supports Mr. Butlin's view that the glands in the anterior triangles of both sides must be removed where one complete half, or both sides of the tongue have been removed. Dr. Wright's method of producing pre-operative artificial immunity, and of operating when the degree of opsonic power is high, was carried out in two cases with most gratifying results. He believes this is the line to be followed in the future, and suggests a wide field of research on these lines. Attention is drawn to a lymphatic gland, a secondary deposit in which occurs in the earlier stages of cancer on the side of the tongue, and in one case was the only gland involved. This gland lies on, or near, the posterior inferior angle of the hyoglossus muscle just above the hyoid bone.

Where the disease involves the under surface of the tip and floor of the mouth, the whole tongue and the genio-hyoid muscles and their fasciæ must be removed.

A description of the writer's method of operation is given, and though much more radical than those generally pursued, the pathological findings would seem to indicate the necessity for such extensive removal of tissues.

W. S. THAYER, M.D. "Observations on Several Cases of Acute Pancreatitis." *Johns Hopkins Bulletin*, November, 1905.

Five cases are reported, four of suppurative pancreatitis with abscess

formation, and one of gangrenous pancreatitis. Of the four abscess cases three recovered, and one died. The gangrenous case was also fatal. The principal features of the cases are as follows: *Case I.*—That of a woman, aged 51, with a personal history of previous attacks of biliary colic. The onset of the present illness came on with an attack of biliary colic and jaundice, followed by fever, nausea, vomiting, and pain on the left side of the abdomen. A deep-seated tumour mass was found occupying the epigastrium and left side of the abdomen, extending well outward and backward into the flank. Operation was performed thirty-seven days from onset and a parapancreatic abscess with fat necrosis was found. The patient stood the operation well, but was in a very critical state for ten days following with frequent vomiting, but made a complete recovery. *Case II.*—Was in a man, aged 34, with a previous history of cramp-like pains over the epigastric area for a year and a half. The present attack came on with severe epigastric pain, vomiting and fever. Examination showed a tumour mass in the epigastrium, and a diagnosis of acute pancreatitis with parapancreatic abscess was made and confirmed on operation twelve days after onset. The patient made an uninterrupted recovery. The third case was in a man, aged 47, who gave a history of biliary colic with jaundice six months before his present illness. The present attack came on with sudden intense cramp-like abdominal pain, associated with nausea, vomiting, collapse, abdominal distention and constipation. Physical examination revealed a tender, painful tumour in right half of epigastrium and hypochondrium. Operation was performed on the twenty-first day from onset. On opening the peritoneal cavity numerous areas of fat necrosis were visible, and the omentum was matted together. On making an opening through the omentum a large amount of dark, brownish-black fluid escaped. The patient's condition was so bad that a drainage tube was inserted and the wound closed without further investigation. The autopsy showed necrosis of the pancreas, with parapancreatic abscess and a stone lodged in Vater's diverticulum.

The fourth case was that of a woman, aged 49, with a previous history of biliary attacks. The present attack was attended with sudden severe epigastric pain requiring morphia. There was persistent dull epigastric pain with nausea and vomiting. Examination revealed a tender tumour in the right umbilical, epigastric and lateral abdominal regions. A diagnosis of pancreatitis was made. At operation an abscess was found which was shut off from the general abdominal cavity by intestinal adhesions. The abscess contained masses of necrotic omental fat, a considerable quantity of which was evacuated, the cavity afterwards being

wiped out and packed with iodoform gauze. The case made a good recovery. The fifth case was in a man, aged 37, who, seven months previously, had an attack of intense epigastric pain with vomiting and purging. He recovered from the attack in two months time. Three weeks before admission he had another attack of epigastric pain with vomiting. These symptoms persisted in a milder degree up to entry. A diagnosis of acute pancreatitis was made from the history and clinical findings, chief of which were the presence of an indefinite mass midway between the umbilicus and ensiform cartilage, which was tender, a little fulness in the upper half and more on the left side of the abdomen, and marked increase in resistance over this area combined with the rather collapsed general condition. Operation showed fat necrosis at tip of the omentum which was adherent to gall-bladder, with some similar spots on the mesentery of the transverse colon. The case was thought to be either acute pancreatitis or possibly carcinoma of the tail of the pancreas, this latter view being held on account of the general thickening of the organ which was most marked at the tail. Two days after operation the patient developed pulmonary symptoms, and on the third day there were three profuse discharges of fresh bright blood from the bowels, and death ensued shortly afterwards. Autopsy showed acute gangrenous pancreatitis with necrosis of the greater part of the pancreas, formation of fat necrosis and perforation of the stomach, duodenum and transverse colon, erosion of the splenic artery with hæmorrhage into pancreas and transverse colon, and cholelithiasis. The causes of pancreatitis are considered, and also the aids to diagnosis afforded by examination of the excreta and urine. Unfortunately, the careful feeding necessary for thoroughly satisfactory observations on the fæces is usually impossible in acute pancreatitis, but the list suggested by Opie should be employed in every case. Glycosuria is rare and of little diagnostic importance. Those cases of acute pancreatitis, which go on to suppuration, the subacute form of Robson and Moynihan, have especial interest in that they alone are regarded as amenable to surgical treatment. The symptoms of this class are sudden, intense, abdominal pain, localized, as a rule in the epigastrium, but often more or less general and associated with obstinate vomiting and collapse. The fever is not, as a rule, excessive. In some instances the attack may be followed by or associated with jaundice. In the course of a few days the acute symptoms subside, but there remains epigastric tenderness with fever, possibly chills, sweating and evidence of deep abscess. Vomiting is often obstinate. The deep-seated mass sometimes to be felt may extend on either side into regions far distant from the normal limits of the pan-

creas, as was so in the cases here reported. The importance of the relationship between cholelithiasis and pancreatitis, and of early operation and drainage are the writer's conclusions.

W. L. B.

JOHN B. ROBERTS, M.D. "A Case of Excision of the Head of the Humerus for Congenital Subacromial Dislocation of the Humerus." *American Journal of the Medical Sciences*, December, 1905.

This deformity is a very unusual one, the writer being able to find only twenty cases previously reported. Although allowing for cases of this form of dislocation being caused by traumatism at time of birth, he believes a large proportion of them are really the result of intrauterine conditions. Subspinous or subacromial dislocations are so rare in adults and children that it seems reasonable to regard them, when found immediately after birth, as true congenital conditions. This view is further backed up by the fact that this condition has been found present in both shoulders of the same infant, and also by the fact of its occurrence in more than one child of the same family. The case presented the usual picture of the dislocation, as is very well shown by the skiagrams. A posterior and an anterior incision were made and reduction attempted but without success. Owing to the rotation of the humerus the bicipital groove with the long head of the biceps tendon was much displaced and in excising the head the tendon was divided in the depth of the wound and unfortunately not recognized at the time. Seen two years after operation, there is three-quarters of an inch shortening, some rotation persists, the belly of the biceps stands out prominently in the middle of the arm, and there is some atrophy of the forearm, and the hand is smaller than its fellow. The scapular muscles appear as well developed as in the other side, and there was marked improvement functionally.

CHARLES GREEN CUMSTON, M.D. "Remarks on Renal Traumatism." *The Practitioner*, December, 1905.

The considerable increase in recent years of renal traumatism is to be explained by the greater number of accidents resulting from the development of modern industry, and by the advance during the last ten years in our knowledge of renal surgery. In consequence of the well protected position of the kidney, traumatism forms a comparatively small percentage of renal diseases, but at the thirty-second German Surgical Congress, Riese was able to tabulate 491 cases. The most common

causes of renal traumatism are blows, squeezing between carriages, etc., and run-over accidents. Muscular tension, as in strong reflex movement to prevent falling, may also give rise to trauma. It is pointed out how trauma may occur from a relatively slight accident. By animal experimentation, as well as in the cadaver, it has been shown that the mechanism of the development of rupture of the kidney depends principally upon a sudden jerking adduction of the lower limbs, pressing the kidney against the spinal column, or by hydraulic pressure acting upon a distended renal pelvis, or an extremely vascular renal parenchyma. In order to produce rupture of the renal pelvis or parenchyma, the ribs must press upon the organ. It is interesting to note that fracture of a single rib is a very rare associated condition, generally two or more ribs are fractured. Subcutaneous traumatism of the kidney gives evidence of general manifestations particularly referable to the central nervous system, and then come the local symptoms arising directly from the renal injury. The general symptoms are apathy immediately after the accident followed or not by unconsciousness, vomiting, a small frequent pulse, subnormal temperature, and in most cases, an extreme pallor of the integuments. These general symptoms cannot be relied upon as of absolute diagnostic value for kidney contusion, nor for estimating the gravity of a given case, because they may arise in any accident, frequently in contusion of the abdomen, and frequently do not correspond in any way with the real gravity of the accident. The local symptoms are more constant and are pain, generally of a colicky character, tumefaction of overlying parts with dulness on percussion, and blood in the urine, with rigidity of the affected side. Should there be involvement of the peritoneum, either by a retroperitoneal hemorrhage or escape of urine, or by rupture of the peritoneum, visceral or parietal, we have added a well marked distension. It is interesting to note that a septic peritonitis does not necessarily follow from the presence of urine in the peritoneal cavity. Petroff collected 14 cases where such conditions pertained, and only one resulted in a fatal septic peritonitis. As regards treatment, the writer believes that many kidney injuries may recover without surgical interference, and prefers to carefully watch his cases, using palliative measures. If the symptoms of severe hemorrhage become marked, or if signs of pus formation show themselves a nephrotomy or nephrectomy is indicated, but the activity of the other kidney should always be previously ascertained.

Three cases are reported, all of which recovered.

CHARLES P. CHILDE, B.A., F.R.C.S. "Wandering Spleen; Hæmorrhage within the Capsule; Splenectomy; Recovery." *British Medical Journal*, December 23rd, 1905.

This interesting case occurred in a woman, aged 54 years, who had had nine children. Her confinements were normal and her general health always good. The present illness came on with sudden pain in the abdomen, retching and faintness. These acute symptoms subsided quickly and had not recurred two months later when she was seen by the writer. At this time there was a smooth, rounded fluctuating tumour occupying the left false pelvis and extending up to level of umbilicus on same side, dull on percussion, could be moved a little from side to side but not upward, and not apparently attached to the uterus. The very justifiable diagnosis of an ovarian cyst, the acute attack being attributed to torsion of the pedicle with hæmorrhage into its cavity, followed by peritonitis which had caused adhesion and fixation of the tumour was made. Operation revealed a cystic tumour with omentum adherent everywhere over its anterior surface. Further investigation showed this mass to be a wandering spleen, with a large blood cyst attached to it. The lower pole was firmly adherent to the left iliac fossa, the spleen lying obliquely across the pelvis with the pedicle twisted on itself, and the lower part very tense. The upper pole was lowermost and turned towards the right. Considerable difficulty was experienced on account of the adhesions, the readiness with which the capsule tore, the thickness of the pedicle, and great tension in its lower part. The writer admits that splenectomy is not the ideal treatment for wandering spleen, but we quite agree with him that in this case it was the only procedure warranted. The case made an uneventful recovery, and one year later showed no enlargement of the lymphatic glands, a condition observed in the after history of three cases of splenectomy reported by Messrs. Ballance and Pitts in 1896, and was in apparent perfect health.

JOHN L. YATES, Ph.B., M.D. "An Experimental Study of the Local Effects of Peritoneal Drainage." *Surgery, Gynecology, and Obstetrics*, December, 1905.

The writer has gone very thoroughly into the literature of this subject from the time when Celsus drained the peritoneal cavity for ascites up to the present time. He reviews the reported clinical and experimental observations of many writers and gives a brief description of his own findings in 31 operations upon dogs. From all of which ma-

terial he arrives at the following conclusions. Drainage of the general peritoneal cavity is physically and physiologically impossible. The relative encapsulation of the drain is immediate. The absolute encapsulation occurs early (less than 6 hours in dogs) and can be retarded, but not prevented. The serous external discharge is an exudate due to irritation of contiguous peritoneum by the drain. There is a similar inward current from the potential into the general cavity. This external exudate diminishes remarkable with the formation of encapsulating adhesions. These conditions, under approximately normal conditions, form about any foreign body, and their extent and density depend on the degree and duration of the irritation of this body. Primarily fibrinous, these adhesions become organized in a few days (three days in dogs). If the irritation persists, they become progressively more mature fibrous tissue. After irritation ceases, their disappearance depends principally upon a mechanical factor, the ability of the involved surfaces to pull themselves or to be pulled loose. Drains should be the least irritating, and should be gradually and finally removed as soon as possible. Irrigation through drains is futile to prevent adhesions, and dangerous. After a drain is inserted all intra-abdominal movements should be reduced to a minimum. As soon as the drain is removed intra-abdominal movements should be stimulated, to aid in the disappearance of the remaining adhesions. Peritonitis, if not too severe, probably aids in the rapidity of the encapsulation of the drain. A drain in the presence of infection is deleterious to peritoneal resistance and should only be introduced to exclude most malign influences. Postural methods, unless destined to facilitate encapsulation, are both futile and harmful, as far as drainage is concerned. Peritoneal drainage must be local, and unless there is something to be gained by rendering an area extraperitoneal, or by making from such an area a safe path of least resistance leading outside the body, there is, aside from hemostasis, no justification for its use. The clinical significance of these conclusions is that drainage is to be used only when we are dealing with dangerous areas or areas likely to become dangerous. The writer holds that the best way to render such areas extraperitoneal is by enveloping a gauze drain constructed on the principle of Mikulicz's tampon, as completely as is practical, with the thinnest gutta-percha tissue, which should entirely surround the whole distal portion and project beyond the skin.

JOHN G. PARDOE, M.B., Aber., F.R.C.S., Eng. "The Treatment of Tuberculosis of the Urinary System by Tuberculin." *Lancet* December 16th, 1905.

The writer's attention has been called more particularly to this sub-

ject during the past seven or eight years by two observations, that tuberculosis of the urinary system is of far more frequent occurrence than is generally supposed, more particularly primary diseases of the bladder; and the disappointing results of operative treatment of all kinds. The tuberculin used in this treatment is that known as Koch's tuberculin rückstand (T. R.) heated to 60° C. for an hour. It is administered hypodermically, the initial dose being 1-500 milligramme and is increased every other day until a definite reaction is obtained. The dose is then reduced to that amount which apparently causes no reaction and is given once a week for long periods. Should a reaction occur at any time the dose is further reduced either in amount or frequency or both. Owing to the long periods of latency which frequently obtain in tuberculosis of the urinary system, those cases apparently cured must be regarded with caution. In his results no case is reported which has not been under observation for more than one year. Out of 21 cases so reported, six died, six showed no improvement, four were much improved, while five were apparently cured. Compared with surgical results this series is encouraging. The writer believes that in tuberculosis of the bladder this tuberculin treatment is the best at our disposal.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

A STUDY OF BRACHIAL BIRTH PALSY.

L. P. CLARK, M.D.; A. S. TAYLOR, M.D.; J. P. PROUT, M.D. *American Journal of Medical Sciences*, November, 1905.

This article deals exhaustively with brachial birth palsies. As the result of dissection of a number of new-born infants, it was found that the only condition which could cause injury or rupture to the brachial plexus was tension on the nerves. When sufficiently great, tension invariably produced lesions of the nerves at the same point, and the only position causing stretching of the plexus was on increasing the distance between the head and neck and the shoulder. In living infants it was found that pushing the head and shoulders apart causes the upper nerves of the plexus to stand out just like fiddle strings. In vertex presentations this attitude occurs when the shoulder is obstructed, either at the

brim of the pelvis or by the symphysis pubis and the head is pulled upon by the *accoucheur*. If rotation or oscillation of the head and neck be added the strain is increased and more damage is apt to occur. A very few cases of temporary paralysis have occurred in normal vertex cases without traction. In breech presentations the lesion occurs from traction on the shoulders in delivery of the head.

In the cadaver, traction invariably caused the fifth root to give way first, then the sixth, and so on regularly down if the force used was sufficient. From the position of the plexus this result was to be expected. The same fact is borne out clinically, as the mildest cases show paralysis only of muscles belonging to the fifth root and progresses from that to cases involving rupture of the entire plexus. The nerves do not give way in a limited transverse section, but fray out over a considerable area, just like an overstrained rope. The site of rupture of the fifth and sixth nerves is above their junction in over 50 per cent. of cases.

A number of figures illustrate the pathology of the condition. The sequence of events appears to be rupture of the perineural sheath and the formation of a small hæmatoma. According to the extent of the lesion some of the adjacent nerve fibres are ruptured or, in extensive cases, the whole nerve. In the process of regeneration organization of the blood clot interferes with the regeneration of the nerve fibres, and, consequently, recovery may be incomplete even in partial ruptures.

The symptoms of "laceration palsy" are very characteristic. The arm hangs powerless by the side and cannot be abducted because of palsy of the deltoid and supra-spinatus muscles; the forearm is extended and cannot be flexed owing to paralysis of the biceps, brachialis anticus and supinator longus; the hand is in extreme pronation caused by palsy of the supinator brevis and biceps; and the entire arm is rotated in so that the palm looks backward and outward. The humerus is rotated in as a result of paralysis of the supra and infra spinati and teres minor.

A fact of very great importance is the presence or absence of neuritis. When an infant remains peevish and fretful for a considerable period, and when handling of the extremity greatly aggravates the pain and irritability, there is present a traumatic neuritis, aggravated by pressure incident to the organization of the blood clot and repair of the rent in the perineural sheath. In cases that do not present this symptom there is a more or less spontaneous recovery, while in those cases presenting evidences of neuritis a considerable palsy will follow.

The degree and extent of lesion cannot be determined immediately after its occurrence. Electrical tests are unsatisfactory and even misleading, and sensory disturbances are not apparent. In the course of

a few months thickening may be detected at Erb's point, the junction of the fifth and sixth nerves.

In the milder cases recovery may occur spontaneously in six to nine months. Even in these cases there may be retarded development and persistent atrophy. In more decided lacerations the outcome depends on the amount of cicatricial contraction in and about the nerves. The occurrence of traumatic neuritis renders the outlook relatively bad from the outset.

Treatment: As the degree of spontaneous recovery cannot be determined for many months, treatment should be directed to maintaining the nutrition of the muscles, to preventing contractures and deformity, and to assist in repair by massage, passive movements, douches, electricity and such apparatus as is necessary to overcome a tendency to deformity.

In cases showing marked evidence of neuritis immobilisation is necessary for two to four months.

The length of time through which palliative treatment should be continued is still a matter for discussion. If complete recovery has not occurred by the end of a year, a prognosis of permanent lesion and a diagnosis of a cicatricial lesion, preventing nerve regeneration, may be confidently made. The only rational treatment is, therefore, excision of the cicatricial areas and nerve suture.

The results of operation in seven cases are recorded: Two died, and the others showed definite improvement, although two cases were aged eight and ten years.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The eighth regular meeting of the Society was held Friday evening, January 19th, Dr. F. R. England, President, in the Chair.

LIVING CASE FOR DIAGNOSIS.

E. W. ARCHIBALD, M.D.—The patient is a woman, aged 32, nine years married: she came to the hospital September 13th, 1905, with what was presumably carbolic acid gangrene of the right hand. The history was that she had suffered for some time with numbness and tingling in the hand with occasional pain, and had consulted a doctor, who prescribed a dessertspoonful of pure carbolic acid in a pint of water, into which she should place her hand for a short time. She states that she simply poured the acid into the water without stirring,

and kept her hand in it for a half-hour at a time; and it is evident that in this way the gangrene occurred. On September 13th, when she was first seen (the applications of the carbolic acid had been carried out daily for one week in August), there was beginning gangrene in the tips of the ring and little fingers, with swelling of the other fingers. She was advised to go into the ward, but she refused and was not seen again until some time in October, when she turned up at the Out-door Clinic. The gangrene now was quite definite, though it had not advanced to any extent, and the rest of the fingers and part of the body of the hand were swollen. There was considerable pain in the fingers and hand, not continuous, but rather of an intermittent cramp-like nature. Towards the end of December she was admitted to the ward with a well defined line of demarcation cutting of the tips of the two fingers mentioned. The rest of the fingers and the hand were dry, glazed and scaly. The question of Raynaud's disease coming up, the patient was closely questioned, and it was found that she had suffered from indefinite pains and numbness and tingling in the other hand as well and also in both feet. She admitted that two of the left hand fingers occasionally became blue, or at times white. These symptoms were indefinite, and had not left any objective signs. It now seemed to us that this was not a case of carbolic acid gangrene purely, and Raynaud's disease suggested itself as a probability. On December 29th the tips of the ring and little fingers were amputated beyond the line of demarcation. Gangrene of the stumps immediately occurred; and pain remained severe and persistent, so that on January 9th the whole of the fingers were removed; what was remarkable was that at the operation there was no arterial bleeding, and but little capillary or venous oozing, though the tissues looked sound. At this time the tip of the index finger too was amputated, and here also there was no bleeding. The middle finger was slightly reddish and swollen, but otherwise there was no sign of gangrene. The amputated fingers were dissected, and no gross arterial disease could be found. It was now noticed that the radial could not be felt at the wrist, and that the brachial was much smaller on the right side than on the left. It was also noticed in the neck that the subclavians ran about an inch above the clavicle on either side. However, physical and X-ray examination showed that there was no aneurysm, nor cervical rib which might cause a local obstruction. There was demonstrated, however, a very low position of the clavicles: that is, they ran apparently in the skiagram below the third rib instead of through the second. This was controlled by comparison with the normal. During the past ten

days there has been a progressive increase in the gangrene which has involved considerably the thumb and middle fingers. With this there has been also a diminution in the brachial pulse, so that now no pulsation is felt at the elbow, and not until one reaches the middle of the upper arm. The artery to the foot seems harder than on the left side, and can be traced as a cord from elbow to axilla. The axillary pulsation is, perhaps, a little weaker than on left side.

It seems to me that the carbolic acid could not have developed all this trouble: Raynaud's disease alone can hardly be held accountable for the whole of the trouble; and besides the fact that the advanced gangrene is on one side only rather disturbs this diagnosis. The crux of the differential diagnosis seems to lie in the point:—Can Raynaud's disease cause a continuous spastic obstruction of large arteries? Or must we assume an organic arterial disease, a sort of severe senile gangrene occurring at an early age? Of advanced arterial sclerosis at an early age I find no mention in American literature; but it is described in certain German surgical works as purely a sclerotic change, in the early stages of which the pulse, *e.g.*, in the foot or wrist, is very small or absent. Another question suggested is as to whether in some cases Raynaud's disease and arterio-sclerosis overlap each other? What is the exact pathology of each?

F. G. FINLEY, M.D.—This is a case of very unusual interest, and it seems to me the condition is one of arterial obstruction rather than of genuine Raynaud's disease. The gangrene, marked and advanced in the right hand and completely absent in the left, is against Raynaud's disease, which is always symmetrical. I would like to ask if the condition in the neck is likely to cut off the vascular supply. As to premature arterio-sclerosis I remember many years ago seeing in Mr. Treves' ward a young man about 26, who had thickened arteries all over his body and gangrene, and Mr. Treves referred to the case as one of premature senility.

WESLEY MILLS, M.D.—It seems to me that this case is one of absorbing interest from a scientific point of view. From the fact that there were some symptoms pointing to Raynaud's disease before the carbolic acid accident it might be worth while to consider whether the injury might not have acted in a reflex way; and yet from the fact that the condition is almost wholly unilateral one might make such a diagnosis as Dr. Finley suggests; nevertheless, the explanation by reflex vaso-motor action would seem to satisfy a good many requirements.

J. B. McCONNELL, M.D.—It seems to be more than a coincidence that the gangrene should be only in one hand, and that, the one exposed

to the carbolic lotion. There does not seem to be any arterio-sclerosis anywhere that one can make out and it is usually a symmetrical disease, and it is a question if one needs to appeal to the presence of Raynaud's disease to explain the condition. The fact of the abnormal condition in the shoulders might mean a certain amount of compression of nerves and vessels, and explain the tingling which she is said to have felt previously, and which is the only evidence given of the presence of Raynaud's disease. If Raynaud's disease was present, would not the gangrene process have been accelerated rather than unusually slow and prolonged, as in this case. We know that gangrene will follow the persistent exposure of a finger to dilute solution of carbolic acid. Here the whole hand was soaked in it, and to this extent has become gangrenous. I think we do not need to look beyond its action for the results seen in this case.

F. R. ENGLAND, M.D.—Are there any other glandular enlargements? As to the rib being the cause of the condition—it seems to me that if this is the case, it should have appeared earlier. The rib has evidently always been there, and does not seem to have been the cause of any trouble before this accident.

J. A. HUTCHISON, M.D.—I would like to ask Dr. Archibald whether there has been at any time a superficial blood supply change in any of the other limbs. Cases of Raynaud's disease generally have more than one limb affected and long before there is any definite gangrene there is this marked blueness and swelling perceptible for at least several months, and in one case I noticed several years.

E. W. ARCHIBALD, M.D.—No certain changes have been observed by us in the other extremities, though at one time I thought I could see a slight blueness in two fingers; but nothing definite enough for the diagnosis of Raynaud's disease. At the same time it is to be noted that when the patient consulted her doctor first, she described the condition as one of numbness and pain, coming on at intervals, with either blueness or whiteness of the tips of the fingers. As to the suggestion of obstruction in the neck, I came to the conclusion, after careful examination, that there was no tumour there, nor a cervical rib; but that there seemed to be an abnormally low stand of the clavicle, which might possibly allow the subclavian to run at an abnormal angle over the first rib and in that sense the first rib itself might cause pressure on that side; but I do not know that one could presume much on that observation. Cases of cervical rib reported usually give nervous symptoms and not arterial. As to the rib first causing disturbance late in life, that is a matter of not infrequent clinical observation,

the reason of which escapes us. I was not able to find any enlarged glands. Dr. Mills' suggestion is a very interesting one; as I understand, it means that, while there was previously a condition of angio-spasm of the vascular periphery, that is, Raynaud's disease, the application of the carbolic produced reflexly a more or less continuous spasm which spread upwards and involved the large arteries. This idea occurred to me, but it seemed hardly possible that the spasms should be so continued as to produce gangrene. I came to the conclusion that there was not enough evidence to show definite obstruction in the neck, and made a provisional diagnosis of premature arterio-sclerosis, which, as a result of the fortuitous carbolic application, led rapidly to a pre-senile gangrene; the gangrene, therefore, being partly carbolic, partly sclerotic.

PHYSIOLOGY AND HYGIENE OF THE VOCAL ORGANS.

WESLEY MILLS, M.D.—Dr. Mills addressed the Society on this subject, illustrating his remarks with various appliances to indicate tension, pitch, resonance, etc., of tones produced by the singer or speaker.

H. S. BIRKETT, M.D.—The ideas which Dr. Mills has brought before us this evening have more than a special interest to those of who are engaged in the treatment of affections of this portion of the respiratory tract which he has specially dealt with. It is quite evident from the study brought before us to-night that the practical application of the ideas which Dr. Mills has enumerated might be put into use in one's own work. It is a very common occurrence to have pupils come for treatment of conditions which they think are largely due to some local cause and which, upon examination, are not the result of disease itself or local conditions, but really produced by faulty vocal production. A striking example is the condition of the vocal cords characterized by a definite localized thickening on the edges about the middle third of each cord, and known amongst the Germans as "Saenger's Knotin," and in England, Board School Laryngitis. In the case of the singer the local trouble is produced by faulty production, and in the board school the teachers are using their voice not only in unhygienic surroundings but with faulty production, and it is to be noted that this condition is improved simply by change in the form of the vocal production without any local treatment whatever.

G. P. GIRDWOOD, M.D.—I should like to add my voice in favour of Dr. Mills' statement that I certainly condemn the use of corsets.

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A PLEA FOR THE NEURASTHENIC.

BY

DAVID ALEXANDER SHIRRES, M.D.,

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Mr. Chairman, Gentlemen,—

The subject I have chosen to speak upon this morning is, "A Plea for the Neurasthenic."

Generally speaking, such a plea to be brought before medical men, is not warranted, but, as a rule, the individual cases that we know so frequently crop up in the course of the daily practitioner's life, with their aches and complaints, worries and annoyances, are not generally given the due consideration that the knowledge of the condition warrants.

The neurasthenic is the name given to a person suffering from neurasthenia, and this allied with conditions such as hysteria, makes up that group of diseases that are called functional. By this it is meant that the functions of organs are altered, though no gross or tangible change of structure is to be seen macroscopically or microscopically. The characteristic changeableness or variableness of the symptoms lead us to suppose that, on that account, function only is disturbed. Function and nutrition are so closely correlated, that if function be long disturbed, nutrition is bound to suffer. At the onset of these diseases, or during the early stages, we may get a condition which is purely functional in type; yet, if long continued, nutrition is bound to suffer, thereafter producing organic changes.

Some day, when we have a more perfect technique, and higher magnifying microscopes, we may be able to place some of the so-called functional diseases in the organic group.

It is a well established fact that a large percentage, if not all, functional diseases are congenital in origin, due to faulty development in

intra-uterine life. The child may grow up, and go through life, without betraying its unstable nervous organism, if no undue strain, which would be an exciting factor, were applied.

Now, let us take up hysteria as one of the most common forms of functional diseases, and one, I think, that we will be able more clearly to understand when we look into the etiology and clinical symptoms manifested in these patients, rather than discuss particularly the etiology, and symptomatology, of neurasthenia. For, if we can obtain a clear perception of what hysteria is, then, other functional diseases will be simplified.

It is very hard indeed, if not impossible, at times, to differentiate between the neurasthenic and the hysterical patient, as both conditions are due to cerebral exhaustion. There are two typical descriptive forms which, in various instances, are sharply defined, and easily diagnosed. In the typical neurasthenic the marked insomnia, inability to concentrate the attention, defective memory, restlessness, fretfulness, irritability of temper, hypersensitiveness, discomforts about the head and neck, exaggeration of the reflexes, feeble pulse of low tension, and the constancy of the above symptoms, the length of time which the disease lasts as well as of the slow progress towards recovery, are diagnostic, as compared to hysteria, where we have marked psychical disturbance, and motor and sensory paralyses, the symptomatology being extremely variable in its nature and constancy.

The typical cases, as described in text-books, are of extremely rare occurrence, though in certain countries, particularly among the Latin races, the typical picture is occasionally met with. On the American continent it is indeed rare. Both diseases are of functional nature, both are congenital in origin, and both affect males and females in about the same proportion. The symptoms of neurasthenia are common in hysteria, and *vice versa*.

Of late years I have had under my care many of these cases, and my sympathies have gone out to the unfortunates who are afflicted with the malady. The layman, and to a large extent, our professional brethren, do not fully appreciate the magnitude of the disorder present in these cases. While gross diseases of the nervous system force themselves upon our attention, and are the cause of a great number of deaths, I do not think I am wrong in stating that the effects of ill health, suffering and incapacity produced by functional diseases are even more serious and far reaching.

Hysteria is defined by Mobius as a condition where ideas control the body, and produce morbid changes in its functions. In the normal

individual the power of the mind over the body has a much greater force in inducing good or bad health than is generally appreciated. The following extracts from eminent authorities show what a vast influence the mind wields over the body.

Dr. William Stokes in his classical work on "Diseases of the Heart," gives due weight to this factor in the cure of disease, and points out how recovery is often retarded by depressing emotions, and in dealing with those cases of cardiac neuralgia he says that one of the most certain remedies consists in removing from the patient's mind the apprehension that his heart is organically diseased.

Trousseau, in his "Lectures on Clinical Medicine," recalls the famous experiments of Claude Bernard, to show the intimate connexion between the floor of the fourth ventricle, and the development of glycosuria; and that between other cerebral areas, and polyuria, or albuminuria.

He also points out how neuralgia excites the secretions of neighbouring glands; how the passions and intellectual engrossments affect secretion; how mental disturbance will increase micturition; anger modify the lacteal secretion; fear produce diarrhœa; and he impresses the fact that the whole digestive system, including the liver and pancreas, may be affected by the mind.

Graves, too, in his "Clinical Lectures on the Practice of Medicine," enforces the importance of what he terms the "power of moral impressions," in aiding the cure of disease.

Sir James Paget, in his "Lectures on Surgical Pathology," directs special attention to the effect of mind on nutrition, and says, "There is scarcely an organ, the nutrition of which may not be affected by the mind." He cites a very telling case of a patient who consulted him about a tumour in her breast, which she believed to be a cancer. Paget boldly assured her that it was not malignant, and further, that it would speedily disappear. The latter portion of his statement he hardly expected to see fulfilled, but he reports, with apparent surprise, that it began to shrink immediately, without either internal or external therapeutic treatment.

Dr. Henry Maudsley, in dealing with the same point, reminds us of what is often observed by army surgeons, that the excitement of battle frequently prevents a soldier perceiving that he has been shot, or received a sabre cut: such wounded men will often continue fighting until faint from unnoticed loss of blood. Dr. Hack Tuke tells us that "the mere concentration of the mind may excite the action of some parts, and lower that of others."

The above quotations not only show the power which the mind has over the body but also serve to explain the rationale of the treatment that should be employed.

Other well known examples of the influence of mind over body have no doubt, been individually experienced. For instance, we all know how depressing it is to most of us to be told that we look ill, though in perfect health. If the remark be repeated by several acquaintances in succession it will take a strong minded person to prevent his giving way to the belief that his health is really impaired.

Many of the Christian martyrs were so wholly possessed by their faith in a power to protect them, that they bore patiently without suffering the preliminary tortures of the rack and final burning at the stake.

If, then, the brain is so susceptible to suggestion in health, we can understand how much more so this would be in neurasthenic, and more especially in hysterical individuals, where a characteristic feature is that they easily acquire conditions, from their surroundings, and readily act to suggestions from those associated with them.

A knowledge of functional diseases if more widely appreciated would be the means of increasing the size of our individual practice. It is through our neglect in treatment of these cases that Christian Scientists and osteopaths flourish so well in our midst; and, if we do not wake up and show attention to this class of patients, other cases not necessarily neurasthenics may also pass into their hands.

I propose, therefore, to offer to this association a few remarks on this subject, and shall try to show that hysteria is a disease of the central nervous system, and that the patient has little or no voluntary power of preventing or interrupting its course. The disease to the public, and to a certain extent the professional man, is chiefly associated with a condition where the symptoms are largely supposed to be simulated, or at least the idea is entertained to a considerable extent that the patient could prevent the symptoms if he so desired. But this is erroneous, the malady is a real one, and altogether beyond the influence of the patient's will.

It was long supposed to be a disease of females, but of late years we have learned that it affects males very largely, if not to the same extent. The name is derived from an erroneous idea that there is a special connexion between the disease and disorders of the womb which, at one time, was even thought to move about the body, causing the local symptoms. The opinion that the disease is primarily, and chiefly, one of cerebral function is now all but universally held.

Hysteria, besides occurring alone, is frequently associated with general and local diseases, such as tuberculosis, arthritis, and it is not surprising that it still more frequently accompanies organic diseases of the central nervous system. The effect of disease upon one part often produces disturbance in function of another part, and of such disturbances hysterical symptoms are frequently the result. Weir Mitchell well describes it when he says, "The symptoms of real diseases are frequently painted on a hysterical background."

The hysterical patient may be bright, intellectual and attractive, in general appearance healthy and robust, even stout and florid. The chief peculiarities of the hysterical brain, as differing from the normally acting one are, explosiveness, want of control, and proneness to exhaustion. So that two kinds of phenomena occur, one a too active and uncontrolled nerve discharge, the other paralyses of various kinds, sensory and motor.

The symptomatology of hysteria is due to an exhaustion, or want of sufficient reserve nerve energy in the central nervous system. This is liable to occur in a subject with a congenital defect in his nervous apparatus, due, as before mentioned, to some faulty laying down of the neurones in intra-uterine life, probably caused by some deficiency in the parents, resulting from bad health, over indulgence, syphilis, alcohol, or due to a nervous instability in their systems.

Of a family born to such parents, five may grow up from childhood to middle life, or old age, without showing any marked nerve deficiency, another member, through ill health, accident, mental worry or stress may develop hysteria. I have no doubt that the others, had they been heavily taxed, physically or mentally, would also have shown some defect.

The normally acting, and healthy brain, has a centre where reserve forces are accumulated, and held in readiness, to be called upon when necessary, and also an equable and steady current of nerve force which passes from centre to centre and thereby produces a state of equilibrium and healthy mutual control. It is a well known fact that exhaustion of some regions entails exhaustion on others which have not been in activity at the same time. Intellectual work, for instance, causes brain fatigue, which renders physical work difficult and *vice versa*. This shows that there is a common source of energy upon which the various regions of the cortex draw in active work, and that nerve force can flow freely from one to another.

In hysteria, there seems to be a want of this free flow, and ebb, and a deficiency in the centre where energy is stored.

Clinically this lack of nerve energy is expressed by explosiveness, want of control, and a tendency to exhaustion. These three characteristic symptoms are manifested in the mental peculiarities of the hysterical subject, as well as in the motor and sensory apparatus.

We all know how, when the emotions of these patients are stimulated, they are unable to control them within appropriate limits. Emotions, in a healthy person, initiate muscular movements of various kinds: expressions of joy or sorrow, as the case may be, controlled, however, within appropriate limits, while the same cause of emotion may, in the hysterical subject, reverberate impetuously and unrestrainedly through the motor centres, mingling the natural expressions of joy and sorrow confusedly together, and producing irregular movements of the limbs or even general convulsions. Emotion in other cases may inhibit nerve action, and produce various forms of sensory and motor paralyses.

An instance of the mental neurones inhibiting the motor neurones, even in the healthy individual, may be cited: Let us suppose that two persons are walking along a street. They hear a cry, and see a child falling from a window in the third storey of a house to the street below. One of them rushes forward to try and catch the child, and save it from being crushed against the sidewalk: the other individual, on the moment of hearing the cry, becomes rooted to the spot, unable to move, or even to cry out. The eminent danger to the child produces an inhibitory power over his actions.

As another instance of inhibition, let us suppose a plank is stretched across a stream, the water being only a few inches in depth. Most of us would have no trouble in walking over; but, suppose the following day, we have to cross the stream, and, due to heavy floods in the interval, there is now a raging torrent five or six feet in depth. The majority of us would have to walk over the plank using great care, while others, through fear, or in other words, inhibition, would not have the power to walk across at all. So one can appreciate how, in the hysterical brain, inhibition is more liable to take place, as it is more susceptible to suggestion. On the other hand, sensory and motor paralyses may be due to exhaustion of the cells of the cerebral cortex, instead of being due to inhibition.

It is a characteristic feature of hysterical patients that they are unable, at times, to resist the impulses of inclination. With this is often associated irritability of temper and undue sensitiveness to annoyance, under which the trifling crosses and vexations of daily life become grave troubles. These patients also usually acquire conditions such as rhythmic and other spasms from association with persons who are subject

to them. They must be caused by the idea, uncontrolled, giving rise to the same spasm. These are cases of ideational automatism and are of cortical origin.

We are all accustomed to observe how readily a normal person is affected by seeing another person yawning, though it may occur in the early morning, when he is in full vigour. A golf player is also aware of how readily he is influenced by the mistakes of his opponent. These influences are, at times, impossible to control. So again, one can easily understand how an excitable, nervous system like that which is present in the hysterical subject would be apt to acquire a set of conditions which he would be powerless to overcome.

Here let us consider for a moment what are the symptoms of exhaustion in the normal individual. Take, as an instance, a doctor who, through stress of work, has not been in bed for 50 hours. If at the end of that period he be placed under examination, you will find that his memory is defective, and that he is irritable, the small discomforts which he would not notice in his normal state, now becoming serious annoyances. Are you to scold him because his memory is not good, and he is irritable and imaginative? Will it do him good? Certainly not. So we can fully understand how a patient suffering from hysteria or neurasthenia should not be scoffed at or depreciated in any way on account of his deficiencies, both are in the same condition and suffering from nerve exhaustion, the former being mental exhaustion from insufficient repose, the latter the result of congenital deficiency.

Now, let us see what are the motor and sensory disabilities present in these cases of hysteria. Before doing so, let me rapidly and briefly sketch the anatomy, physiology and pathology of the central nervous system.

The central nervous system is made up of neurones, motor and sensory; the motor for motion, the sensory for conveying sensation. In addition to these there are masses of neurones which are especially developed and constituted. These are the neurones of the higher mental centres.

Each neurone consists of a cell body and processes. The dendrites are processes which collect impressions, and carry them to the cell body. The axones are the processes which convey the impulses from the cell bodies. Generally speaking, the axone is a very long process, sometimes traversing the distance of half one's body, while the dendrites are small, and probably only twice the circumference of the cell body. Therefore they are microscopic in character, requiring a medium power for their detection. The cell body is the seat of their vital functions.

The normal neurone, whether motor or sensory, or whether constituting the higher mental centres, to function properly, requires the presence of the following four requisites: (1) stimulation, (2) nourishment, (3) controlling influence, and (4) continuity.

(1) *Nourishment*, of course, is easily understood.

(2) *Stimulation*. By stimulation I mean that impulses must pass from one neurone to another, more or less constantly. In the lowest types of animal life the nervous system is made up of more or less separate and independent units. Stimulation is not so much a factor here, but the higher we go in the scale, the more necessary is stimulation. In man it is absolutely necessary. Changes in the cell body, the result of loss of stimulation were first described by Van Gehuchten, when he ligatured the posterior roots of the spinal cord in monkeys. Within a very limited time, chromolithic changes could be detected in the cell bodies of the anterior horns. Another example is a case of tabes, where the posterior roots are diseased. The anterior horn cells on account of want of the usual stimulation coming through the posterior roots, show certain changes, and this is expressed clinically, by loss of tone in the muscles supplied by the anterior horn cells, and is the cause to a great extent of the loss of the knee jerk in tabetic cases. The same changes can be demonstrated in the cells of the cerebral cortex, when a centre is not called into use, in other words, not stimulated. That particular centre shows defects which, if long continued, may render it more or less useless.

(3) *Controlling Influence*. A neurone to be healthy must be under controlling influence, so that the normal amount of power is allowed to be given out; without this too much may be expended when unnecessary. As an instance to show the controlling influence of a neurone, let us take, for example, a hæmorrhage into the internal capsule destroying the upper motor neurone in that situation. What happens? The extremities of the patient become paretic, also markedly spastic, the latter being an expression of increased tone. The knee jerks are exaggerated, the muscles hypertrophy. This points out that the upper motor neurone regulates and controls the trophic influence of the lower neurone, and, as above stated, when the upper neurone is destroyed we get hypertrophy of the muscles, spastic and paretic conditions, with increased reflexes.

Now, let us take an example showing the controlling influence of the neurones of our higher mental centres. We all know that persons with well balanced minds will enjoy "bon mots," and clever anecdotes with heartiness and laughter, but within the confines of moderation; or, if

visited with trouble, and sorrow, may weep or feel sad, but within bounds. The nervous individual who is suffering from want of control, under the same circumstances, will laugh and cry, mingling the two together. Not only may the stimulation produce excessive sadness or joy, but the stimulation being uncontrolled may spread out, and mingle with the neurones in the neighborhood, shown clinically by marked facial contortions, or even general convulsions.

(4) *Continuity*, of course, is necessary; for, without it, stimulation and controlling influence cannot be carried out.

What changes occur in a neurone that is slowly dying from the result of disease or exhaustion? The cell body being the vital centre, the parts farthest away from that centre will naturally be the first to undergo changes, due to the lowering of the vitality of the cell body. Let us take as a simile, when our general circulation is lowered, due to an enfeebled heart, our fingers and toes are liable to suffer from cold, if the body be exposed to a low temperature, in other words, the circulation is harder to keep moving at those distant parts, as compared with the parts of the body in close proximity to the organ involved. Naturally also in disease or exhaustion of neurones, those with the longest axones are the ones first to suffer, and this can be shown clinically.

To-day, it is more or less universally accepted that hysteria is due to interference with, or involvement of, the cell bodies of the cerebrum. Both hemispheres are involved, as a rule one more than the other, the right being more generally affected. Clinically, we often have hemi-anæsthesia or hemiplegia, which clearly shows that they are the result of cortical involvement. Other manifestations pointing to the cerebral origin of hysteria are the psychical evidences already discussed. We may have symptoms pointing to involvement of the respiratory centres, which may be slowed or accelerated. So also may the heart's pulsations be affected.

An interesting case of hysteria, where these centres and others were involved, was that of a medical man, whom I was called to see, in consultation with three other physicians. His pulse, for three months before I saw him, had been averaging 150 per minute. His respirations were sometimes accelerated to forty-five per minute, at other times they fell to ten. At no time was there any temperature, nor any symptoms pointing to organic involvement of the heart. I recommended that he should be brought to Montreal, and undergo the Weir Mitchell treatment. Before leaving home the patient was in grave doubts as to whether he would ever reach the hospital alive, as he thought his con-

dition was so serious. Shortly after entrance the pulse began to subside, and with two months' rest the patient made a complete recovery. At the end of this time, I gave him permission to take up his residence in one of the suburbs of this city, so that he would be conveniently situated to come and see me once a week. This morning he paid me a visit. The pulse, respirations and heart on examination were normal. The anæsthesia and concentric contraction of the fields of vision, which were present on entering the hospital, have now completely disappeared. Four months from to-day he is to be allowed to resume his medical practice.

We may have symptoms pointing to involvement of the vaso-dilator and vaso-constrictor centres. This may be due to a direct action on the sympathetic nerves, but not necessarily, for such phenomena can be produced by stimulation of the cortex. It is a frequent observation that, on pricking the anæsthetic cutaneous surface of an hysterical subject, no bleeding occurs. Similarly, local œdema is present in some cases, due probably to dilatation of the blood vessels. Polyuria is a common symptom depending on the dilatation of the renal vessels. Hysterical anuria may occur and last for days, indicating contraction of the blood vessels of the kidneys. Spontaneous hæmorrhages into the skin, or from the stomach or lungs, are likewise due to extreme dilatation of the vessels.

An instance of this condition occurred in a patient some eight months ago. I was called in consultation by the family physician. During a period of two months, the patient had had two hæmorrhages from the stomach, and one from the lungs. As she had shown very marked nervous stigmata during this time, the consultation was suggested. The examination, both by the physician and myself was absolutely negative of organic disease. We concluded that the hæmorrhages were of hysterical origin. She was put under my care so as to undergo the Weir Mitchell treatment at the Montreal General Hospital. After two and a half months had elapsed she was placed in a country home with a nurse, and kept in as restful a state as possible. Her condition has markedly improved. I have no doubt that within a couple of months from now, she will have regained a state of health that she has not enjoyed for years.

Other examples of involvement of the higher mental centres of hysterical patients are frequently noted, such as concentric contraction of the field of vision, amaurosis, loss of sense of smell, taste, hearing.

At this point of the paper I think it would be well to take up the differential diagnosis between a functional and organic paralysis. Let

us first deal with the sensory affections, and later with the motor. In this way we shall be better able to appreciate the etiology of the condition.

The most fertile source for the production of organic hemianæsthesia is hæmorrhage into the internal capsule. In hysteria, the patient is not conscious of the anæsthesia present, while in organic trouble he readily appreciates the loss. In the first instance the disease affects the cell bodies themselves, while, in the organic, the cell bodies are not involved, but the axones are, and at some distance from it, with the result that, the cell bodies being uninjured, they are aware of not receiving the usual stimuli. As a comparison, one might mention the difference between a general and local anæsthetic. If local anæsthesia was produced in my leg, I should at once have the impression that my leg was dead; while, if put under a general anæsthetic, I would, of course, not be aware of the condition present.

In the hysterical subject hemianæsthesia, pure and simple, is a very common symptom. Hemianæsthesia alone, in organic disease seldom, if ever occurs, because when a lesion takes place in the internal capsule where the sensory fibres are so closely associated with the motor fibres anteriorly, and the fibres of the eye behind, a pure sensory paralysis is impossible. The presence of motor involvement, homonymous hemianopsia and hemianæsthesia are a frequent occurrence in organic diseases for the above reasons. In fact, either a motor enfeeblement plus anæsthesia, or homonymous hemianopsia and anæsthesia are sure to be evident in those diseases.

Another differential sensory disturbance in hysteria is the characteristic islets of anæsthesia throughout the body. Their position at once shows that the anæsthesia is not due to peripheral involvement, as it is not in the course of any nerve supply, nor due to involvement of the cord. The explanation is that the sensory fibres as they leave the internal capsule on their way upwards, subdivide, and end separately in the cortex. And, therefore, small cortical areas if functionally depressed would give rise to limited areas of sensory deficiency in the skin.

Another form is the glove and stocking anæsthesiæ in the extremities. This also cannot be due to peripheral disease from its distribution. In a case reported by Pitres, where the patient was suffering from anæsthesia of the arm, he exposed the ulnar nerve, and upon pricking it with a sharp instrument, no sensation was present, yet the muscles connected with the nerve contracted, showing that conductivity must have been present, as the motor impulses were carried. This case again shows that the sensory anæsthesiæ must be of cortical origin.

It is also of interest in the *ansæthesiæ* of hysterical subjects that we have, not only complete forms of *anæsthesia*, but may have incomplete forms, as, for instance, *analgesia*, or, loss of pain sensations only, or we may have only loss to heat, or *electro anæsthesia*, or alterations in the muscle sense. Tactile sense is the last to go, and never disappears alone.

Besides *anæsthesia* of the skin, we may have *anæsthesia* of the mucous membranes, or we may have *hyperæsthesia* taking the place of *anæsthesia* in the skin and mucous membranes. The bones and joints may also be involved in like manner. Another form of sensory disturbances which is sometimes very distressing is *paresthesia*.

A patient in my care at the present time attending the neurological out-door clinic of the Montreal General Hospital, whom I saw in consultation with Dr. Evans three months ago, received a severe shock from lightning during a thunder-storm. This was followed by insomnia, headache and marked nerve depression. Two weeks later, she began to complain of an abnormal feeling as if her face were all broken out with an eruption. The hands and feet, at times, had the same feeling. The mental impression was so strong, that if her casual glance happened to rest on her hands or feet, she became frightened at their abnormal appearance. When the feelings of discomfort in the face were troubling her, examination of herself in the looking glass would not convince her that the skin was normal. The patient's mother and sisters would tell her that there was no visible alteration to them in the extremities or face. This annoyed her very much. Two months ago she came under my care. At that time she had improved considerably in respect of her sleeping power, and other symptoms of the nervous break-down; still the discomfort in her face and extremities were as real as ever.

This patient, Miss T., is a bright, intelligent, active young woman, and in no way does she look the nervous invalid she is. After several conversations, I was able to partly convince her that her face and extremities were perfectly normal, and that she was suffering from a purely mental condition. At my suggestion she refrained from looking at herself in the mirror for over a month, and can now reasonably deduct and understand the cause of her discomfort. As a means of helping the condition, I have put her into the hypnotic state, and have suggested the disappearance of her trouble. Results have been very satisfactory.

In discussing the dissociation of the different sensations, pain, heat, cold, in connexion with the *anæthesiæ* of the hysterical subject, I would

just mention the close analogy this dissociation of sensation has to the alteration, dissociation or exclusion of the colour fields that occur in these cases. Therefore, understanding that these conditions occur, and can be demonstrated clinically, one can appreciate how exclusion of certain functions in the higher mental centres might also occur, such as complete absence of knowledge of a language, in which the patients were at one time fully versed. Or it may affect the visual memories of the faces of certain persons, or the memory of certain places. There may be the characteristic condition so frequently described as "dual existence."

I had the pleasure of seeing an interesting case in Boston last autumn, while attending a meeting of the neurologist's club in Dr. Prince's house. The patient, a lady of bright intelligence and refined appearance, was shown to us as an example of a condition somewhat resembling a dual existence. She was suffering from synovitis of the right knee, causing enlargement of the joint, and associated with considerable pain. Dr. Prince pointed out that the patient's story of the origin and course of her joint trouble, when given verbally, was quite at variance with the report when written by a pen. When asked to explain this she stated that she had no control over the pen, and that she was compelled in some way to write as she did. To test this Dr. Prince had her translate a selection from a German work on medicine. Her knowledge of German was extremely limited, and she had to spell out the words, and with difficulty arrived at the proper enunciation. While doing this a pen was placed into her hand and she was requested to answer questions in connexion with her knee trouble. This she did in a free and easy manner, never hesitating a moment in writing out long sentences that were necessary for the description of her condition; it being done while she was struggling over the translation of the German work. I may here state that the patient had been under Dr. Prince's care for a number of years, and had shown many well marked manifestations of hysteria on different occasions.

Motion. The motor paralysis of hysteria differs from that of organic, in that the leg is the most involved, the arm less, and the face not at all; while in organic paralysis the arm is most involved, the face next in order, and the leg least of all. The reason for the former is that, in hysteria, the condition is one of nerve exhaustion or paresis of the vital centres. The parts of the neurones farthest away from their centres are the ones most involved. For, nerve force, generated in the cells of the cortex, would only be propagated to the distant muscles of the leg, if considerable, though it might, if far less, reach the muscles

of the face and tongue. In organic diseases the arm is the most involved. The reason why the leg is most affected is that the parts which are usually associated in action on the two sides of the body are intimately connected in their nerve supply, so that the centres can supplement each other, should one side be paralyzed. In cases of hysteria there are evidences to show that, though one hemisphere may be affected so as to produce hemiplegia, the other is also affected, but in a lesser degree, and cannot make good the defect of its fellow.

The above differential diagnosis is simple when the clinical signs are so sharply defined, but one in practice frequently comes upon cases of both organic and functional diseases, that do not altogether agree with the above. Many authorities state that the following symptoms, spastic condition of the extremity or extremities, increased knee jerks, ankle clonus, rectus clonus, Babinski's sign, Oppenheim's sign, are diagnostic of organic disease of the upper motor neurones.

In my experiences I have found a few of those, and sometimes all of them, present in cases of pure hysteria. The reason for this, I think, is that in cases where the neurones are suffering from an extreme exhaustion, they would show clinically the same paralytic symptoms as would organic disease destroying the functions of those sources. Only, in the cases of hysteria the variableness of those symptoms would aid in making a differential diagnosis, from an organic. But again, we often come across cases of hysteria which do not adhere to the usual rôle in being variable, but are more or less persistent, at least for a month or longer. In these cases we find great difficulty in making a diagnosis.

In the healthy individual, with a normally stable nervous system, there is, as already mentioned, an equable current of nerve force passing from centre to centre, producing a state of equilibrium, and healthy mutual control. Not only is this present, but there seems to be a reserve storehouse of energy, from which force can be drawn when necessary. If the individual is called upon to stand a severe and prolonged mental, and nervous strain, he is able to do so for a considerable time without manifesting many symptoms of exhaustion. In the neurasthenic and hysterical individual there does not seem to be present the storehouse of energy, or free flow and ebb of nerve force, passing from centre to centre. The reason is because the patient does not seem to be able to bank up any reserve energy, but lives more or less like some speculators on a margin. When a severe strain occurs, a very limited time elapses before fatigue becomes manifest, due to absence of this nerve force of energy and equable, steady nerve current,

with the result that the normal equilibrium and mutual control is upset, and this is followed by symptoms of explosiveness, and a tendency to exhaustion in the central nervous system, clinically expressed by psychical, motor and sensory symptoms.

We are all aware of the fact that when a powerful dray horse is drawing a load up a steep incline, it will pull with a more or less steady force till it reaches the top, while another horse of less muscular build, though it may be of more highly bred character, in drawing the load begins to feel, when but half way up the hill, that it is too heavy for him. Being of a willing disposition he will make vain attempts to reach the top, as shown by his suddenly throwing himself into his collar every now and again, in this manner producing spasmodic attempts to reach the top. The jerkings may finally cause a break down, due to the giving way of some part of the harness. In the same way, nervous patients who are, as a rule, ambitious and anxious to hold their social and other positions in the world suffer from the "ups and downs" in their physical condition, in trying to carry this out. Their attempts to keep up with their competitors sometimes results disastrously. As already pointed out, the exhaustion of some regions in the brain entails exhaustion upon others which have not been in activity at the same time.

Again, in hysteria some centres retain their usual activity, while others are inactive. It is usual, however, for the one area to affect the whole system, and this goes to show that the various nerve centres draw their force from a common supply. If the supply of energy is constant in its production, that would mean constant supply in all the centres. These centres are bound together so as to produce physiological equilibrium, and constant power would imply constant control of one by the other.

The hysterical brain shows no anatomical alterations to distinguish it from the healthy one. The difference is physiological. It is more excitable, the nerve discharge being violent, and more easily produced, less under control. The nerve force ebbs and flows along the centres in such a way that certain parts are left high and dry, so to say, while others are flooded. These conditions are all liable to rapid fluctuations, so that the symptoms appear and disappear in a remarkable manner.

Those who wish to go more fully into this subject should read the Presidential Address, given by Dr. Sharkey, before the Neurological Society of the United Kingdom, February, 1904, on the above subject.

Treatment. In discussing the treatment I shall simply give you a rapid sketch of the outline, dwelling on some parts more than others.

I hope in a future lecture to take up the treatment more in detail.

The main factor in the treatment of the disease is rest, mental and physical. The more pronouncedly typical of hysteria is the case, the more necessary is it to have isolation and complete rest; while in neurasthenia, rest, associated with a certain amount of cheerful surroundings and pleasurable occupation, is advisable. The patient, as before mentioned, may be bright and active, and he may be healthy and robust in appearance. For that reason his friends cannot understand, nor are they inclined to be tolerant of, one who does not show any tangible local disease, or notable derangement of function, but is full of complaints, professing incapacity to do many things. They think the patient is shirking his work, and duties, and even pleasures in which he could well take his share. But the incapacity is very real, and if the relatives or physicians do not fully appreciate this, but urge the patient to throw aside his trouble and try to perform the duties he is unable for, the kindly relations between them will not only be upset, but the malady increased. Herein lies the value of isolating those patients from their friends and relatives.

As we saw in the early part of this paper, neurasthenia or hysteria may occur alone; yet it is also frequently an accompaniment of organic disease, such as tuberculosis and rheumatism. Being so, it is not hard to understand that, with organic involvement of the nervous system, functional diseases are still present in a much larger proportion.. We also saw that functional disease is largely congenital, this going to show that the nervous individual is abnormal in the respect that he is more easily fatigued and, therefore, more liable to encroachment of organic disease. If function, therefore, be long disturbed, nutrition will be subsequently affected: and if this is so, we can see the nucleus or beginning of true alteration taking place. Bearing this in mind, we may be able to obviate many serious conditions in patients who come under our care.

Last week, while paying a visit to the neurological clinic at the Massachusetts General Hospital, in Boston, under the care of Dr. Walton, I saw a number of tabetics being treated after the method recommended by Frankel. I enquired whether he was obtaining good results from the treatment. He said that many of the patients had become considerably improved. No doubt the improvement was, in some cases at any rate, largely due to relief of some of the functional troubles present in tabetic cases. In connexion with functional troubles associated with tabes, I remember well Prof. David Ferrier, of London, relating to me some two years ago, the history of a patient suffering with tabes dorsalis.

A young man of forty-four had been affected with tabes for six years. Specific disease had preceded the onset by some four years. The course of the trouble for the first two years was slowly progressive. He had been treated at different times, by Sir William Gowers and Dr. Buzzard of London, and Marie and Dejerine of Paris, but the disease had steadily progressed, till, at the end of the fourth year of the trouble, he had become more or less paraplegic and bedridden. When it was necessary for him to go out and enjoy the fresh air, he had to be taken in a bath chair or carriage.

On one occasion while returning from the park, in his bath chair, he suddenly remembered that he had invited some friends to dine that evening, but had forgotten to order cigars. He requested his manservant to leave him at the tradesman's entrance to the flats, where he was residing, and run round to the neighbouring block for the cigars. Ten minutes should have been sufficient for this, but twenty minutes elapsed, without a reappearance of his attendant. Becoming annoyed at the delay, and having been left alone so long, he finally decided to try and get up to his room unaided. With great difficulty he managed to get out of the bath chair and crawled along by holding on to the different neighbouring objects, and in this manner reached the elevator. Fortunately the elevator was on the level of the basement, the attendant being on the entrance floor above. The patient after considerable difficulty managed to seat himself on the elevator and was in the act of drawing his legs in when the lift started to ascend in response to a call. Due to this unexpected occurrence, the patient momentarily became paralyzed, so that he could not move his legs at all. Up went the elevator, and the patient saw that he would be crushed to death unless he became able to draw his legs in, or throw himself to the floor of the basement. He decided that the latter would be the best procedure, even though he broke his legs in so doing. He threw himself off and landed upon his feet. From that day he has been able to walk. Of course he is suffering from tabes still, and has to use a stick, but his paraplegic condition was largely one of functional type. Had this accident not occurred, probably the patient's disease would have gone on advancing. His ability to move about and exercise himself, and the good results he was able to derive, mentally and physically, from mingling with others, certainly helped him considerably. Confinement to his couch, and the absence of social intercourse would have reacted on his physical condition, and the disease would in all likelihood have gone on progressing. Such instances go to show how advisable it is to pay

due attention to functional disturbances, either when alone, or associated with organic disease.

In cases where hysterical symptoms are well marked, the method of treatment recommended by Weir Mitchell is of great value. In this the treatment consists mainly of isolation, massage, electricity and good feeding. One of the most important points in the treatment of these cases is the selection of the nurse, who is to take charge of the patient. It is absolutely necessary that the two make suitable companions. If the first nurse is not suitable, in that the two are unhappy together, she must be discharged, and the right one found. No nurse should resent being removed on such a charge for such a reason. No one gets on smoothly with every one they chance to meet. One sees the effects upon normal healthy people, of constant association with an uncongenial companion, but under such conditions the person can at least be relieved of the companionship for longer or shorter periods of the day. If the hysterical person is made to live with a nurse whom she does not care about, or even dislikes, she cannot escape from her, and the result will be disastrous.

I am in the habit of considering, as far as possible, the character of every one who comes into contact with hysterical patients, knowing full well that personal influence plays a most important part in their recovery. This is the natural and healthy form of suggestion.

Another important point in the treatment of these cases is that the medical man shall fully understand the nature of the patient's discomforts, so that he can meet him more than half way in being able to describe his ailment, when the patient seeks his aid. No hurried visit or signs of impatience in listening to the patient's story must ever be shown. A clearly expressed explanation of the cause and effects of the trouble will greatly aid the patient inasmuch as he will feel that his case is understood. A feeling of absolute confidence in the medical attendant is of unlimited value.

The quotations of eminent men given in the early part of my paper went to show that the mind in health has a powerful effect on the body; that impressions may increase, diminish or otherwise modify secretion, promoting or retarding recovery, and obliterating or exaggerating pain. Is it not reasonable to suppose that hysterical patients who, we have seen, are very impressionable and readily acted upon by suggestion, will respond to healthful surroundings and congenial companions, placing confidence in the medical adviser and in those who are attending upon them?

As to drugs, one should commence with indifferent and mild remedies. Tonics are advisable. Valerian and assafetida are in some cases very valuable. Bromides have to be very carefully used, as they are liable to increase rather than diminish the exhaustion present. One has to treat the symptoms as they arise, as, for instance, the use of counter-irritation in some cases of local spasms; ice bags, cold douches, etc., to relieve headache. The most of our remedies lose their efficiency after a time, and new methods constantly be used to win the necessary psychic influence.

CHOREA IN A CHILD TWO YEARS OF AGE.

BY

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The patient was a female child two years and three weeks old. Up to the early part of last summer she was in perfect health, breast fed and well developed. Her parents are of neurotic disposition and an aunt is an epileptic. In June a rash appeared upon the child's abdomen and thighs with a slight elevation of temperature. Scarlet fever was suspected, but the throat and tongue were clean, and it was looked upon as an erythema from indigestion. The following day, after exposure in an open car, she was noticed to have her ankles and hands swollen, with a good deal of pain, fever and inability to walk. Her physician saw her and made a diagnosis of rheumatic arthritis and the remedies prescribed had a good effect. Within a month after this attack she was seen by another physician, who found a cardiac lesion and he advised the parents to take the child to the country. On July 24th, whilst there, the child developed swelling, redness, and pain in the ankles and wrists with fever.

She was brought to the city and I saw her for the first time. There were well-marked rheumatic symptoms and a regurgitant mitral murmur. Under salicylates and the application of lead and opium the arthritis subsided, leaving marked anæmia and muscular weakness. A week later the child developed decided choreic symptoms. She was peevish and irritable. The choreic spasms affected principally the tongue, mouth, neck, arms and lips, and later the trunk muscles were implicated. They were of the usual purposeless character and the child was unable to walk or feed itself. The cardiac lesion remained unaltered.

Absolute isolation in a large, bright, airy room with a patient nurse was instituted. A mixture of bromide of potash and dialysed iron was given three times daily with five grains of chloral hydrate at night and plenty of lithia water. In a month the child recovered perfectly, and the anæmia disappeared. She has been free from all symptoms for the past three months though the cardiac condition has remained unchanged.

The points of interest are, first, the tender age of the patient. Risien Russell says it is rare to see chorea before the fifth year. Osler found the age limit lower in America; it was rare before the fourth year, and extremely rare before the third year,

Secondly, the relationship between chorea, rheumatism, and endocarditis. The antecedent rheumatic history is clear, and it is also plain that the endocarditis proceeded the chorea. Albutt states that in very few cases the endocarditis precedes the chorea, but this case would appear to support the discarded view that chorea was due to emboli consequent upon endocarditis. It also upholds the view that the same infective agent is at work in these three diseases as other etiological causes for the chorea could be eliminated.

DEFICIENT HUMIDITY OF THE ATMOSPHERE AND ITS EFFECTS UPON THE RESPIRATORY TRACT.

BY

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The scope of this short paper embraces a subject relating chiefly to the ventilation of dwellings, but involving, in a minor degree, the heating of the same—viz.: the Relative Humidity of the Air, as commonly supplied to ordinary dwelling or sleeping rooms.

Along with my observations on relative humidity, I shall have to quote a few chemical analyses of the air, taken at the same time, but these chemical results I shall endeavour to render in their simplest form, in order that they may not obscure the main argument.

During the winter time, in this country, I am safe in stating that most houses are kept "comfortably warm" inside. In nearly all these instances the air, though warm, is very dry—in other words, the relative humidity is low. This condition of affairs, I maintain, is distinctly deleterious and has a very marked effect upon the human organism—one which, I am sure, has always been overlooked in the greater part.

It is answerable, in the first place, directly for a condition of hyperæmia of the mucous membrane lining the respiratory passages, chiefly that of the nose and pharynx.

Secondly, the importance of this result cannot be overestimated, for its bearings are very far reaching in their effects. Let me cite to you, as an instance, a disease in which everyone at the present moment is deeply interested, viz., pulmonary tuberculosis.

I need not point out to this assembly of medical gentlemen that, in the very early stages of pulmonary tuberculosis, the hyperæmic condition, associated with the acute congestion present, is greatly increased by the irritation due to a dry atmosphere.

That being an acknowledged fact, surely the dry atmospheric conditions, already referred to as prevailing in most dwellings, must be classed or designated as insanitary, and they must exert a very harmful influence in cases of pulmonary tuberculosis.

The same line of reasoning applies with equal force to many pulmonary diseases, *e.g.*, acute bronchitis, pneumonia, asthma, etc., etc.

The subject first attracted my attention on account of my own personal experiences. When I first came to Canada, it chanced to be winter time. During that same winter I suffered greatly from congestion of the nose and throat, and to a less extent of the bronchial passages. This condition was always most noticeable after a prolonged stay indoors. By keeping my windows open, or going outdoors I could obtain speedy relief. On thinking the matter over, I naturally jumped to the conclusion that it was probably due to vitiated atmosphere in the quarters which I occupied. I made most careful chemical examination of the air in the rooms, but found that there was nothing to note beyond a little excess of carbon dioxide in it—certainly not enough to warrant such symptoms. The amount found was .07 per cent.

I had proof of this conclusion in the conditions prevailing in the place where I spent most of the day. Here the chemical analyses of the air often showed as much as .08—.09 per cent CO_2 . Under these conditions I never suffered any discomfort like that already described. Evidently I had to search for some other cause.

I next turned my attention to the relative humidity of the air, and here the results were distinctly surprising.

The accompanying tables will show you extremely well the results of my observations.

Before referring to the tables, let me draw your attention to the well known fact that, given a certain quantity of air at a definite temperature, containing an amount of moisture sufficient to saturate it—when-

ever you warm that same air, the moisture contained therein is no longer sufficient to saturate it, but it is capable of taking up some more water vapour before saturation point is reached. This is another way of saying that whenever air containing moisture is warmed the relative humidity is lessened.

The term relative humidity being always used to express the amount of moisture actually present in the air, as a percentage of the amount necessary to completely saturate it, at any given temperature.

Saturated air is unbearable, and too dry air is very unpleasant. The best and most comfortable condition is where the relative humidity is about 70—75 per cent.

	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.
Average rel. humidity. . . .	87·8	86·7	79·2	78·1	79·2	80·3
Average temp. (indoor) . .	64°	64°	65°	66°	66°	65°
Average rel. humidity (indoor)—windows closed.	58	53	46	41	42	45
Average rel. humidity (indoor)—windows open. .	66	61	58	57	57	58

	N	O	CO ₂
Average composition outside air in percentage	79	20·96	·04
Average composition indoor air per cent.	79	20·94	·06

Turning now to the tables, you will notice how constant the indoor temperature is on the average. This is as it should be, but you must at the same time bear in mind what an enormous difference this entails when the temperature outdoors is 0° F., or many degrees below that point, and what a change in the relative humidity of the air this great difference in temperatures involves.

During the coldest months the relative humidity indoors and the indoor temperature keep fairly regularly hand in hand.

During the months of October and November this relationship is not by any means constant; this is because the furnaces are usually not in full swing until the end of the latter month, and, consequently, a great deal of outside air, in an unaltered state, finds its way into the house or dwelling. The most important figures on the table are those relating to the relative humidity indoors (windows closed). Compare these with the relative humidity of the outside air, and also with the optimum 75 per cent. which we have already mentioned.

The influence of open windows, admitting outside air direct, upon this series of observations, is very marked—the relative humidity at once goes up, and more nearly approaches that of the outside air, which in Montreal is fairly constant, averaging about 75—80 per cent.

Reverting to the series relative humidity indoors (windows closed), I would call your attention to the enormous differences between these figures and those pertaining to the humidity outdoors—especially during the months of December, January, February and March. These differences show a deficit in some cases of 50 per cent. in the moisture contained in the air indoors. Now I am sure it will be conceded to be a great strain upon the membranes lining the respiratory passages, whenever a sudden transition is made from 80 per cent. moisture to 40 per cent.

As a logical deduction it follows that the higher the indoor temperature, under these closed conditions, the lower will be the relative humidity, and consequently, the greater will be the irritation to the respiratory mucous membranes.

In a few houses I have noticed an average temperature of 75° F.

The lowest relative humidity which I possess is 35.8 per cent.—but I feel certain that lower records are to be found.

The points brought out in studying the tables will explain why any factor causing an increase of the relative humidity in a very dry atmosphere will be the means of affording relief, and ameliorating the condition of irritation of the respiratory mucous membranes. Having experimented on myself, so to speak, I next endeavoured to find similar cases, and being tremendously handicapped in this sense—not having any patients—I had to wait a considerable time.

Amongst my friends I encountered a fair number of experiences similar to my own. I was much struck by the points of likeness in their various descriptions of their particular symptoms.

“Stiffness of the nose and throat” was a term very commonly applied. “A feeling of tension between the eyes”—(evidently congestion

in the frontal sinus)—also “irritation spreading through to the ears.” were descriptions given by not a few.

In several of these instances I took samples of air from the rooms occupied by these individuals, and at the same time made observations on the relative humidity.

In all cases I found the carbon dioxide very little, if at all, above the normal—the other chemical constituents perfectly in keeping with good air,—but in every single instance the relative humidity was low—generally about 40 per cent.—never exceeding 50 per cent.

Just lately I was asked to inspect a house wherein there were five children (three boys and two girls) with a very interesting history.

On coming into town from the country, where they had been spending the summer, the boys soon after began to lose tone and develop “coughs”—especially the eldest boy, aged 10 years. On examination these boys showed a very marked condition of chronic hyperæmia of the nasal mucous membranes—the appearances such as are usually described as “spongy.”

Curiously enough, coupled with this condition was a typical chronic pharyngitis; most noticeable in the eldest boy.

Examination of the boy's chest revealed nothing abnormal.

The little girls did not suffer in any way. During my inspection I was informed that the window in the girls' bedroom was usually left open all night, but that those in the boys' rooms were not. The ventilation of the house generally was very deficient.

On taking observations, I found the usual lowering of the relative humidity to a marked degree—average 40 per cent. (minimum 38 per cent.)—in the boys' rooms. In the girls' room it averaged 55 per cent.

Gas was used for lighting purposes in the house, and knowing that the quality of this commodity is not particularly good, I thought this might have something to do with the matter; but here again I could not bring forward any analytical data to support such a conclusion.

I recommended that the windows in the boys' room be left open a little all night, and a little moisture supplied to the room—the results were marvellous. The boys commenced to improve forthwith and are now quite well.

I think this is fair proof that I had hit the right nail on the head. I am particularly anxious for you to have the opinion of Dr. Birkett, as he holds very decided views upon the subject, and his large experience amongst cases of this description must make his opinion extremely valuable to us.

In conclusion, I will venture to put forward the statement that this condition of excessive dryness of the atmosphere, in houses, is a large factor in the causation of many affections of the naso-pharynx in children.—a general chronic hyperæmia of the nasal mucous membranes—sometimes leading to adenoid growths and catarrhal conditions of the Eustachian tubes.

Looking a little further ahead, without pushing the argument too far, with reference to pulmonary diseases, may the suggestion not be put forwards that, if a very dry atmosphere exerts a very deleterious effect in those cases in which acute congestion of the lungs exists, this same unhygienic condition may be a powerful predisposing or causative factor in the normal body as regards the aetiology of these diseases? I would not wish to be misunderstood in the way of claiming that this is the *only* factor, and that some other deleterious products in the atmosphere, due to bad ventilation, do not produce harmful effects. I simply wish to emphasize the fact that this dryness of the atmosphere is a very potent factor.

In the cases I have cited to you, I think we may safely eliminate any chemical constituents in the air, owing to bad ventilation, as being the chief causes of the disturbances mentioned. The question of heat alone may be dismissed also, for we all know that this cannot, by itself, produce symptoms like those I have brought before you.

Finally, I should like to be placed on record as holding very decided views upon catarrhal affections of the mucous membranes—especially those of the respiratory and gastro-intestinal tracts—being due to climatic conditions.

I know for a certainty that in this, and some other countries, many persons suffer from intestinal inflammations, which are undoubtedly due to climatic causes. I can show that there is no question of it being due to “microbic” agencies. In this connection I have a very shrewd suspicion that our well known friend “appendicitis” is primarily due to similar causes—but all this is somewhat outside the scope of this paper. However, I hope I have opened up a subject which will afford grounds for discussion, and that some of the members present will give their experiences and observations, whether for or against my contentions.

THE COMPOSITION OF CYSTIN CALCULI.

BY

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The study of cystinuria has recently come into importance through the work of Loewy and Neuberg,¹ and of Alsberg and Folin.²

A little over a year ago Loewy and Neuberg published the results of an investigation of cystinuria, which started with the assumption that as cystin itself is an amino acid, the metabolic disturbance taking place must be in general a disturbance of amino acid character.

In the investigation of a case of cystinuria, they were, however, unable to demonstrate the presence of either leucin or tyrosin, the amino acids most commonly associated with the urine. On feeding amino acids in the pure condition by the mouth, tyrosin and aspartic acid were eliminated by the kidneys, although under normal conditions these acids are changed to urea and other compounds on passing through the organism.³

From this they concluded that the breaking down of protein substances in the intestine did not proceed so far as the amino acids above referred to, else it would be impossible to understand how amino acids fed by the mouth should behave differently from those produced *in vivo*.

Their engaging theory has not received any experimental confirmation outside that furnished by themselves, and certain other cases of cystinuria subsequently examined by Alsberg and Folin, by Simon,⁴ and by ourselves⁵ have failed in certain respects to substantiate their findings.

In the course of their investigation a circumstance of great scientific curiosity developed. Cystin, according to the recent researches of Friedmann⁶ and others,⁷ is a diamino-dithio-dilactic acid, having the sulfur atoms which connect the two lactic acid groups in the β position, with the amino groups in the α position. Produced in the hydrolysis of proteins, and as seen in the usual cases of cystinuria, it forms hexagonal plates which agree in every particular with the classical description assigned to this substance.

As is well known, on feeding cystin to humans or to dogs under normal conditions the substance is almost completely transformed by oxidation into sulfates.⁸ No cystin appears as such in the urine. In accordance with the views expressed by Loewy and Neuberg it should be eliminated without oxidation in the urine. Accordingly cystin, prepared from keratin, was fed to the cystinuric, and, as was expected, the whole of the cystin fed reappeared quantitatively in the urine.

In the possession of Loewy and Neuberg was a calculus which gave the chemical reactions for cystin, but which did not, apparently, have

the power of six-sided crystallization typical for this substance. It was suspected that the calculus cystin might be the second modification having the amino groups in the β position and the sulfur bridge in the α position. If this were so, the calculus cystin would have an entirely different configuration from the protein cystin itself and also from the cystin found in the urine, both of which have been considered to be identical. It might also be suspected that the physiological behaviour of the calculus cystin might be different, and that on feeding, the cystinuric might have the capacity to oxidize this form of cystin to sulfates, a property which he lacked with the protein cystin. The calculus was therefore fed to the patient, and in absolute variance with the behaviour of protein cystin, the cystin of the calculus was completely transformed to sulfates.

Why the cystin calculus differed from the cystin eliminated in cystinuria was left unexplained.

Could the experiments be verified, it would tend to depose the amino acids from the very prominent position which they had heretofore held in theories of metabolism.

The experiments shortly referred to above are given with such circumstance that it is almost impossible to conceive that Loewy and Neuberg were in error, and yet, no one since has been able to confirm, their results, either as to the peculiar behaviour of a cystinuric to amino acids, nor has a cystin calculus been found corresponding to the singular one described by them.⁹

It has been suggested that the calculus of Loewy and Neuberg contained tyrosin, and that in the mixture of these two substances these investigators mistook the acicular crystals of tyrosin for an aberrant form of cystin.

In the course of a recent visit to Montreal, one of us had the opportunity of examining the cystin calculi in the Museum of the Medical College of McGill University. It is our desire to express our thanks to Professor J. G. Adami and to Dr. M. E. Abbott for placing this valuable material at our disposal. The collection of cystin calculi is an unusually extensive one. Under it were grouped eight cases, two of which, however, were found not to be cystin.

The following are the case reports, and the results of the investigation. For examination, the filings of the whole face of a calculus were dissolved in dilute ammonium hydroxid, and allowed to evaporate spontaneously on a microscopic slide. The residue was observed under the microscope. The presence of tyrosin was tested for by Millon's reagent. The numbers given are those of the Museum.

B. 1. No. 53, Book III.—Pale, waxy, white calculus. Knobbed and dumb-bell shaped, 30 mm. by 18 mm. No weight. Seems to be fairly homogenous. Lateral operation. Male, 18. Roddick.

Completely hexagonal cystin. No tyrosin.

B. 2. No. 57, Book III.—Large, flat, pebble-shaped calculus, 38 mm. by 26 mm., by 14 mm. Weight 26.9 grams. White, waxy, mulberry surface. Rough. Distinctly crystalline on section. Has the same brown colour, deeper towards the centre as B. 1. Lateral operation. Male, 33. Fenwick, 1873.

Completely hexagonal cystin. No tyrosin.

B. 3. No. 3, Book III.—Set of eight small calculi. About 3-4 mm. Total weight 2 grams. Grayish white, smooth, irregular in shape. Some facetting. Passed. Male, 29. Fenwick.

Completely hexagonal cystin. No tyrosin.

B. 4. No. 112, Book III.—Set of three calculi. Very irregular, long in shape. Darker in colour than preceding. Vary from 12 mm. to 3 mm. Weight 1 gram. No name. No date.

Completely hexagonal cystin. No tyrosin.

B. 6. Calculus 15 mm. by 8 mm. Pale, brown and waxy. Has a jagged process. Nephrolith. No weight. James Bell, 1891.

Completely hexagonal cystin. No tyrosin.

B. 7. Two small calculi. Larger 5 mm. by 6 mm. Somewhat pointed, waxy looking. Slightly rough surface. Passed. No weight given. Knill, 1890.

Completely hexagonal cystin. No tyrosin.

It must be stated in conclusion that the examination of a museum collection of cystin calculi is not altogether decisive regarding the composition of cystin calculi in general. Those calculi assembled under cystin are naturally those which have responded to the microscopic test for this substance. It is of interest that none of the calculi above reported contained anything which would correspond to the acicular type of cystin described by Loewy and Neuberg. Furthermore, none of them contained any tyrosin mixed with the cystin. A more correct method would be to investigate all the calculi giving a lead reaction for cystin in a large collection such as that belonging to McGill University. This, for obvious reasons, we have been unable to do.

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POISONING BY ORTHOFORM.

BY

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Having had occasion to relieve an extremely painful varicose ulcer on the ankle of a woman, orthoform was chosen, as being analgesic and antiseptic. It relieved the suffering completely within a few minutes, which relief lasted about ten hours.

After using the powder during about two weeks, with satisfaction as far as pain went, there developed an eruption on face, scalp, neck, also, but less extensively, on trunk and limbs, of large, pinkish-red papules, pink wheals on face, and erythematous patches on neck and chest. The skin around the ulcer was of a pale pinkish-yellow for about five inches, covering the œdematous tissues, and the ulcer itself was gangrenous.

The pulse ran up to 120; temperature went up to 102.2-5° one night. The tongue kept clean, but there was some headache. The ulcer continued excruciatingly painful so that morphine had to be given during two or three days.

The orthoform had been put on very plentifully, at least twice a day, during about a fortnight, beginning a few days before the confinement of the patient.

Cases of poisoning by the drug have been reported by Bracy and Asam-Muman; the latter mentions sloughing of ulcer for which the substance had been employed.

APPENDICITIS RESEMBLING TUBAL PREGNANCY.

BY

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Mrs. J., a charwoman, was admitted to the Samaritan Hospital on the 15th January, giving the following history: She was 35 years of age, had been married twice, and had two children and one miscarriage by her first husband, the last child thirteen years old. She has always been in poor health, suffering a great deal from eczema, and a year ago was several weeks in another hospital for varicose veins. Her last regular period was in September. She missed her October and November ones, and when six weeks over time she began to have irregular hæmorrhages every week or two, and ever since she has had a good deal of pain in right side. She had several weak spells, but no actual fainting. About four days before admission she was taken with severe pain and fever, and suffered so much that she sent for Dr. L. Gilday, who found her with a pulse of 100 and a temperature of 103. He at once suspected appendicitis, but, owing to the pain being so low down, the possibility of tubal disease was considered. He consulted with Dr. T. P. Shaw, who agreed with him that the diagnosis was obscure but that it was a case for operation. By the time she reached the hospital, however, her pulse and temperature had come down to normal.

On examination the woman, who was very thin, was seen to have a rounded tumefaction, the apex of which was situated about two inches below McBurney's point. It was tensely fluctuating and there was not much muscular resistance. Her pulse was 70, and temperature 99.2-5. By bimanual palpation a rounded sausage-shaped swelling could be felt at the bottom of Douglas cul-de-sac on the right side, and this mass appeared coterminous with the swelling which could be seen and felt under the abdominal wall. From the fact that she had had irregular hæmorrhages for the last month I was inclined to think that this mass was a pregnant tube from the inside of which the placenta was already separated enough to cause hæmorrhages into the uterus, though it had not yet ruptured. The possibility of appendicitis co-existing was discussed, as many cases are on record where appendicitis has been mistaken for tubal pregnancy, and *vice versa*, the writer having reported several in a paper before this Society last year. There are also many cases of pus tube being mistaken for appendicitis, and *vice versa*, several such cases having been reported in Dr. Elder's paper.

But in view of the fact that so many women have died from rupture

of an undiagnosed tubal pregnancy, who might have been saved if the physician had only thought of such a thing, and also because the writer has stumbled upon and saved several cases of tubal pregnancy under the mistaken impression that they were cases of pus tube, he has always taught that it is better to suspect the condition even if we occasionally do not find it, but find something else which needed the operation, than not to suspect it at all and let a great many women die who might have been saved.

As she was in very poor condition she was kept a few days on preparatory treatment, and on the 19th January the abdomen was opened in the middle line and the right tube brought up for inspection. Although firmly adherent to the mass in Douglas cul-de-sac it did not contain a pregnancy and it was evidently not the mass we had felt per vaginam. Nothing was done to either tube or ovary or uterus, but the appendix was next looked for. It was found embedded in adhesions deep down in the pelvis and almost perforated and gangrenous. On beginning to free it there was a gush of thin and very fetid pus which was all removed with sponges, after which the appendix was brought up, detached from a coil of small intestine and removed flush with the cæcum which was then closed with a purse string suture, and again by a Lembert suture. On examining the above mentioned small intestine, it was found enormously thickened, and so friable that it was impossible to sew the peritoneum over its large raw surface. After stopping the oozing with hot sponges, it was dropped back into the pelvis, where it had come from. It was the cause of the doubtful diagnosis, because it felt exactly like a large, solid sausage; and lying, as it did, at the bottom of the pelvis just where we usually find a heavy pregnant tube, it is no wonder that it might be mistaken for a tubal pregnancy before rupture.

As the general peritoneal cavity had been protected by hot towels, and the intestines were not soiled, the abdomen was not flushed out lest poisonous material might be carried to uninfected parts. All raw surfaces were sponged clean and dry, and in case that more suppuration should take place after the abdomen was closed, and in case that the badly injured small intestine should break down, it was necessary to provide good drainage. The writer prefers a rubber tube to gauze which, he thinks, does not always drain. A good sized rubber tube with many holes in it all the way down was passed, by means of a pair of sharp pointed forceps pushed through the top of the vagina behind the uterus, which caught the end of the tube, and brought it from just above the pubis to just outside of the vulva. The abdomen was then

closed with silk worm gut through and through sutures. The patient's pulse was exceedingly weak before and all through the operation.. She had an anxious convalescence, the temperature going once to 104 3-5, and her pulse to 140. But by the twenty-sixth day here temperature and pulse were normal, and she is now quite convalescent. Fortunately she had no vomiting, and took nourishment well.

I would like to call attention to the great advantages offered by the method of drainage employed in this case, and I have used it in many others. By keeping the patient with her head raised after the operation any pus which was formed from the pyogenic membrane lining the abscess cavity, as well as any fecal matter which would have escaped if the damaged small intestine had perforated, would easily and surely have found its way by gravity to the drainage tube extending from the abdominal incision down to Douglas's cul-de-sac. As this tube had good sized holes in it all the way down it drained the whole pelvic cavity, and during the first few days several ounces a day of bad smelling pus ran out of the vagina. The tube and vagina were kept sweet by irrigating night and morning with solution of peroxide of hydrogen. After three or four days it was taken out because the discharge from it had become much less, but at once the temperature went up, and the tongue became dry and brown, so that we had to reinsert it, with the result, however, that the evidence of septic absorption gradually decreased, until now when her temperature has been normal for several days. Unfortunately this method of draining is only available for women, but the plan of raising the head so as to make the drainage tube the lowest part of the patient's body is just as applicable to men, and I think should be used more often. When a drainage tube is not employed and we are trusting entirely to the peritoneum to dispose of the exudation and blood we have been accustomed to raise the foot of the bed so that fluids in the abdomen would gravitate towards the diaphragm, under the generally accepted belief that the peritoneum has the greatest absorptive capacity at that part. But it is perhaps open to question whether it is wise to allow these fluids, which are sometimes poisonous, to flow from one end of the peritoneal cavity to the other, and whether it would not be better in all cases in which we know that there will be much oozing of blood and serum to raise the head of the bed and let them drain into Douglas cul-de-sac where it is so easy to drain into the vagina. I might go even further and say that in cases in which we have not drained at all, and when things are not going well with the patient, it might be advisable to make an incision into Douglas cul-de-sac, a very trifling operation, and put in a drainage tube. The

patient whose case is here reported could hardly have recovered without drainage, and owing to the abscess being situated low down in the pelvis, it would not have been drained so well against gravity as it was by the method employed.

Another point worth noticing was the almost normal temperature and normal pulse with an almost perforated appendix and five inches of the small intestine almost gangrenous. Instead of being a reason for not operating as many might think, these favourable conditions are the best argument for operating when the physical signs indicate an inflammatory mass in the neighbourhood of the appendix or tube. It is well known that appendical abscesses sometimes go on to the stage of cold abscesses, and that when operated on at this stage they give the lowest mortality, always excepting the very early operations, before twelve hours have elapsed from the beginning of the attack, which not only have practically no mortality but give a very easy convalescence. This is the third or fourth case in which I have operated for appendicitis with a normal pulse and temperature and found the appendix perforated or almost gangrenous.

The board-like resistance of the rectus muscle when the abdomen is touched is generally given as a valuable sign of appendicitis, but in this case there was very little resistance or tenderness, except on very deep pressure. And what pain there was, was referred rather to the region of the right ovary and tube than to McBurney's point. I remember a similar case at the Western Hospital in the care of one of the surgeons, where there was neither tenderness nor rise of pulse or temperature and where the man was walking around, and yet the appendix was gangrenous.

The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in physiology, surgery, or pathological anatomy; the arbitrators being the physicians and surgeons of the Massachusetts General Hospital. The subject for competition for the year 1907 is on Some Special Subject in Physiology, Surgery or Pathology. The amount of the prize for the year 1907 will be \$500. Dissertations will be received until April 14th, 1907.

T H E

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THE "CURE" OF TUBERCULOSIS.

Tuberculosis is so widespread and fatal a disease, that one can readily understand the interest which is aroused by any announcement of a new method of treatment. In the campaign of education which is now going on it is inevitable that many imperfect notions should become prevalent. Instead of keeping the mind fixed upon the essential nature of the disease, even members of the profession have become enraptured. They think of it, not in terms of an infectious disease, but as an apocalyptic manifestation. They refer to it in terms of hyperbole, as a white plague, a pale horse, or a reaping machine. These metaphors do not make for precision of thinking or accuracy of statement.

The curability of tuberculosis has become so involved in conjecture that it is difficult to speak temperately of any new measure which promises relief. We cannot forget the fiasco in which Koch's great

“discovery” ended, the suspicious circumstances under which Behring’s “discovery” was announced to the world, nor the engineering to which Marmoreck’s serum treatment was subjected. Sensible men must not be blamed if they receive with an extreme of scepticism each new announcement as it appears, particularly when the great intelligence comes to them through the daily newspapers which are not celebrated for correctness of relation, or scientific reticence.

We are led into these wide reflections by the proclamation in a Sunday newspaper that on the 17th of February, 1906, it was “able to make an announcement which will bring joy to thousands all over the continent who are the victims of that dread disease which an old writer once called the ‘Murderer of the Children of Hope.’ Consumption can be cured.”

This excess of enthusiasm arose over a paper which was read before the Montreal Medico-Chirurgical Society on February 16th. by Dr. George A. Brown, entitled, “A Cure for Tuberculosis,” with “living cases of pulmonary, laryngeal, cutaneous and joint tuberculosis, showing the result of treatment.”

We propose to lay aside all preconceptions or prejudices which may have been aroused by the method in which this “important discovery” was made, and to address ourselves to the subject itself. We have not been favoured with the text of Dr. Brown’s paper, and shall be obliged to depend upon our memory of what was said at the meeting, assisted by the usual stenographer’s notes of the proceedings.

In the first place, we have nothing but praise for Dr. Brown, that he, a physician engaged in the general practice of medicine, should have done any work at all, and arrived at results—whether right or wrong—upon so important a subject. The general practitioner has become too distrustful of his own ability, and too careless of his opportunity, and has been content to rely upon the specialist and the clinic. Dr. Brown has done something to controvert this tendency.

It is but right in a matter like this that criticism should come from a man’s friends. Seeing the cases which Dr. Brown showed at the meeting of the Medico-Chirurgical Society, it struck an observer that, in one case at least of lung disease, the bacilli had not been found in the sputum; that in the case of the skin lesion on the arm, it might perhaps be luetic, that in the case of tuberculous disease of the bowel of two years standing, the diagnosis must be well supported by history, and signs of disease elsewhere, if the bacilli are not found.

Before the subject can be even touched, in a controversial way, it is necessary that it be proved, beyond all doubt that the cases are really

cases of tuberculosis; and it seems to us that Dr. Brown has not been sufficiently careful to safeguard his work in this respect.

The proper place for this criticism is in the meeting of the society at which the communication was made; and, as a matter of fact, criticism taking this ground was made. Until this criticism is properly answered the method of treatment recommended by Dr. Brown cannot be accepted without reservation.

MCGILL AND THE WEST.

It is too soon to speculate upon the result to medical education in the West of the notable departure which has recently been taken by McGill University in establishing at Vancouver a College which, while under independent management, is henceforward to rank as a college of McGill University. If any movement should be initiated for providing medical teaching at Vancouver it will no doubt naturally associate itself with the new institution, which is to be called the "McGill University College of British Columbia."

For the last seven or eight years, Vancouver High School has been working in close affiliation with McGill, and the connexion thus formed has been felt by both parties to be capable of considerable further development. It should be said, however, to begin with, that in seeking such development, McGill has not been actuated by any motive of rivalry with other universities. Its sole object has been to do what it can to promote the unification of higher education in Canada.

The action recently taken was foreshadowed in the address presented by the University to the Governor-General on the occasion of his visit in February, 1905, in which reference was made to the project of what was called "Federation through Education." It is felt that growing centres in the West should be helped to avoid the mistakes made elsewhere, especially in districts where there are to-day so many small colleges out of all relation to each other, and very often hampered rather than helped by some denominational connexion.

The future alone will show whether the present movement will in time be supplanted by the establishment of a Provincial University in British Columbia. Meanwhile, the new college at Vancouver will probably long be content to remain a component part of one of the leading Canadian universities, deriving prestige from its connexion with McGill, while retaining in all essentials its own autonomy.

THE OPHTHALMOLOGISTS.

The passing away of Dr. Buller left a wide break in the ranks of the ophthalmologists of Montreal. There was a vacancy in the chair of Ophthalmology at McGill, and at the Royal Victoria Hospital. These two positions have been filled by the appointment of Dr. J. W. Stirling as professor of ophthalmology in the medical faculty, and ophthalmic surgeon to the hospital. As a result, the position of ophthalmologist at the Montreal General Hospital, previously held by Dr. Stirling became vacant. To this there were three aspirants, and Dr. George H. Mathewson was selected by the governors on the 23rd of February.

Upon the grounds of seniority alone Dr. Stirling's appointment to the faculty was justified. It was not unnatural either that he should apply for the position in the Royal Victoria Hospital, previously occupied by Dr. Buller, and this position he felt free to accept.

The governors of the General Hospital must have been embarrassed in making a choice by reason of the excellency of the three candidates who offered. Dr. Kerry had served the hospital faithfully for eight years and received much consideration on that account. Dr. McKee had a brilliant record as a student, and scientific worker. He also had served for three years under Dr. Buller, and further qualified himself by prolonged residence abroad in the study of his special subject, previous to his appointment as an assistant Ophthalmologist of the General Hospital, a position which he still still holds. Dr. Mathewson had years of service to his credit in the Western Hospital; he is a graduate in two faculties of McGill; he was assistant for four years in the Royal Victoria Hospital, and has just returned from a period of study in Vienna.

The report of the Director-General of Public Health for 1905 has appeared with commendable promptness. The little pamphlet of 28 pages is an interesting dissertation upon many things: upon the necessity for a department of public health; the progress of bubonic plague throughout the world; the prevalence of cholera; the transmission of yellow fever; the red light treatment of scarlet fever; the history of leprosy; Behring's "discovery"; Japanese sanitation. The quotations from medical journals and newspapers give to the report the character of a "retrospect." The actual work of the department is described in something under three pages. Either that is not enough, or the work has been unimportant.

The first annual report of "Brehmer Rest" has reached us. This house of rest at Ste. Agathe provides for persons who are recovering from illness, and are liable to the infection of tuberculosis. The aim is rather to prevent the onset of the disease than to contend with it when it has once gained a foothold. Dr. Richer has charge of the medical arrangements. The plan upon which the institution is conducted appears to us to be thoroughly sound.

The officers of the International Medical Congress, at Lisbon, have requested Dr. Clark Bell, President of the American Medico-Legal Society, to organize an Auxiliary Committee to secure contributions to the medico-legal sections of the Congress; embracing medico-legal, military, naval and railway surgery, hygiene and epidemiology. Dr. Bell requests persons interested in those subjects to communicate with him at 39 Broadway, New York.

A curious sign of the gradual transformation of London is the tendency of publishers to move from the city westwards. During the last few years several prominent firms have left their old quarters in Paternoster Row and its neighbourhood. The centre of the London book-producing world might, in fact, now be placed somewhere near Charing Cross. It is to this region that Mr. T. Fisher Unwin has removed. His new office is at No. 1 Adelphi Terrace. Adelphi Terrace is known to architects and antiquarians as one of the most interesting works of the brothers Adam. No. 1, the new home of Mr. Unwin's business, was, in the second quarter of the nineteenth century, the residence of Sir Edward Banks, the builder of Waterloo, Southwark, and London Bridges. About twenty years ago it was occupied by the Arundel Club.

The *Maritime Medical News* is now published by the Imperial Publishing Company, and appears in a new dress. It has always been an interesting journal, and now is much improved.

Dr Benson Ambrose Cohoe of the medical faculty of the University of Chicago, has resigned to accept a position as resident physician and bacteriologist at the Johns Hopkins Hospital. Dr. Cohoe is a graduate of the University of Toronto and went to the University of Chicago two years ago from Cornell, where he was an instructor in biology.

Dr. Elzear Pelletier, secretary of the Provincial Board of Health, has received a letter from Dr. C. J. Fagan, secretary of the British Columbia Board of Health, transmitting an offer of Lord Strathcona to assist in the establishment of a national sanatorium for the treatment of tuberculosis throughout the Dominion.

In this letter Dr. Fagan states that he has just returned from Great Britain, where he had a conference with Lord Strathcona on the subject, who authorized him to state that: "If the authorities and the general public would demonstrate in a practical manner their desire to have such an institution, he would be ready and even anxious to contribute to a national movement which would have as its object the gathering of the tuberculosis patients of Canada at a place found most suitable for the purpose."

Reviews and Notices of Books.

TREATISE ON DISEASES OF THE SKIN; FOR ADVANCED STUDENTS AND PRACTITIONERS. By HENRY W. STELWAGON, M.D., Ph.D., Professor of Dermatology in the Jefferson Medical College and Woman's Medical College, Philadelphia, etc., etc. Fourth edition, thoroughly revised. Philadelphia and London: W. B. Saunders & Company, 1905. Canadian agents: J. A. Carveth & Co., Limited, 434 Yonge Street, Toronto.

As we have three times in the last five years referred to the excellence of this text-book on skin diseases, we shall confine ourselves on this occasion to noting the more important changes and additions. Since the last edition appeared in 1902, very little additional knowledge has been gained except in the single department of therapy; and here the discovery of the therapeutic value of the Roentgen rays, high frequency currents, Finsen light and Radium has revolutionized the treatment of many of the hitherto incurable diseases. As is to be expected of every new agent, the value of these methods of treatment was at first overrated, and experience was needed to determine in how far their use was warranted. The author, we think, has sifted the evidence most impartially, and his conclusions are sound and tend to conservatism.

Under the heading of General Remarks on Treatment, a comprehensive description is given of the instruments used and methods of their employment in Radiotherapy, Actinotherapy, and high frequency currents. This is a most valuable addition and should show the reader

that only by an expert is their use justified. The article on *Lichen ruber* is omitted in the present edition and this disease included, and we think, rightly, under *Pityriasis rubra pilaris*, with which it appears to be identical. So, too, *Dermatitis vegetans* of Hallopeau is included under *Pemphigus vegetans*. In considering the treatment of *Lupus vulgaris*, a detailed account is given of the Finsen light method, which while it is held to be invariably of benefit, has the great disadvantage of requiring lengthened exposures of at least an hour extending over a period of often three years. The cosmetic effects obtained are better than by any other means. Of the Roentgen rays on the other hand the author states that one cannot say in a given case, how much good it will do. In the majority of cases it is curative, and in others absolutely ineffective. It possesses advantages over the phototherapy in that a larger part can be under treatment at one time and the results in favourable cases are comparatively quickly obtained. Nothing new has been added to our knowledge of the etiology of *Lupus erythematosus*, and it is still an open question whether it should be listed among the cutaneous manifestations of tuberculosis. The same uncertainty obtains here with regard to the value of the X-rays, a trial alone will show whether complete success or absolutely no effect will attend its use. Probably the majority of cases are benefitted, but the proportion is not so large as in *lupus vulgaris*. The author reports attaining excellent results in a few cases by high frequency currents. No mention is made of the recent work on the *spirocheta pallida* as a cause of syphilis.

In speaking of the treatment of *Epithelioma* by means of the Roentgen rays and Finsen light the author refers also to the use of radium, which he considers as of less benefit and more difficult to limit in its action. *Perifolliculitis suppurative conglomerata*, treated as a separate disease in former editions, is now included under ringworm of the skin.

To sum up, Roentgen rays are beneficial in old patches of psoriasis, eczema ani, eczema seborrhoicum of the face, naevus vasculosis, both forms of lupus, epithelioma, sycosis vulgaris, persistent rebellious cases of acne, and ringworm of the scalp. The Finsen light in old patches of psoriasis, furunculosis, both varieties of lupus and epithelioma.

A change has been made in the substitution of plates of the author's own cases for those from Mracek's *Hand-Atlas*, which appeared in former editions. While for some reasons it is advisable that an American work should not have to depend upon German plates, it must be admitted that in the quality of the workmanship and the accuracy in representation of the lesions, the American work suffers in comparison

with the German. Several new coloured plates have also been added in the present edition.

TEXT-BOOK ON THE DISEASES OF THE EAR, NOSE AND PHARYNX. By Drs. D. B. ST. JOHN ROOSA, M.D., LL.D., Professor of the Diseases of the Eye and Ear in the New York Post Graduate Medical School and Hospital, and BEAMAN DOUGLASS, M.D., Professor of the Diseases of the Nose and Throat, in the New York Post Graduate Medical School and Hospital. Macmillan Co., 1905. 621 pages. Price, \$3.00

The authors are to be congratulated upon the production of a very useful and complete text-book of the Diseases of the Ear, due cognizance being taken of all the latest advances in diagnosis and treatment. The associated conditions of the nose and throat are also thoroughly handled, and this is of much value in a text-book on diseases of the ear, in which, as a rule, this portion of the subject is rather cursorily dealt with. The book can be strongly recommended to general practitioners and students. It is admirably printed and profusely illustrated.

J. W. S.

ABDOMINAL OPERATIONS. By B. G. A. MOYNIHAN, M.S. (London), F.R.C.S., Leeds. Philadelphia and London: W. B. Saunders & Company, 1905.

This is a most remarkable work on a department of surgery which in recent years has attained great prominence, mainly because it has been made practicable by modern aseptic technique. By no other branch of the surgeon's art can so many lives be saved and so much suffering relieved. Mr. Moynihan in his work deals only with those operations which are common to both sexes. No gynaecological operations are included. As its name implies, the work is one describing methods of operation; pathology and symptoms are not dealt with, and only incidentally and occasionally are indications discussed. In the first chapter the bacteriology of the stomach and intestines is briefly discussed. This is justified, the author says, by the fact that "many of the problems connected with the surgery of the stomach and intestines, depend for their elucidation upon a knowledge of the bacteriology of the alimentary canal." Billroth in 1874 was the first to show that the contents of the intestines in the new-born are always sterile, and that the yellow discharges seen soon after birth are first to contain

micro-organisms. The appearance of bacteria depends on the nourishment taken. That constant bacterial inhabitant of the human intestinal canal, the Colon bacillus, is taken in with the food. The degree of infection of the gastro-intestinal canal, however, varies very much according to the quality and nature of the food taken and the interval which may have elapsed, and in the different parts of the canal. Normal digestion and evacuation greatly lessen the numbers of bacteria of the digestive tract. In intestinal obstruction the contents are teeming with bacterial life of extreme virulence. The experiments and observations of Harvey Cushing are given honourable prominence by the author in connexion with this subject.

The second chapter treats of the preparation of a patient, the conduct of operations generally, and the after treatment. Catgut and celluloid thread, or, as it is sometimes called, Pagenstecher's thread, are the ligature and suture materials employed by the author. He has entirely abandoned silk. In the sterilization of catgut the iodine method of Claudius is exclusively employed. In this he is at one with all who have ever employed it. Ease and simplicity (of preparation) commend it and its reliability is admitted on all hands.

In the after treatment of the patient the author frequently gives 10 grain doses of aspirin for the relief of pain, avoiding morphia whenever possible. He gets his patients out of bed sooner than most surgeons, at the end of six or seven days in a good many cases. In the advantage of this we agree with him as also in his high estimation of the value of massage of the legs, arms, and back, commenced a few days after the operation when everything is going well.

In the remainder of the forty-nine chapters into which the book is divided, all the operations of abdominal surgery other than gynaecological, are carefully and clearly described. The illustrations are numerous, beautiful and clear. In the description of individual operations one naturally looks for the author's opinions on debatable points. Two of these may be noted: In tubercular peritonitis he is strongly of opinion that only in cases accompanied with fluid effusion should operation be undertaken, and that the fluid should be evacuated with the least possible violence to the peritoneum, and the wound closed without drainage. Separation of adherent coils of intestine is to be avoided whenever possible; as the result will often be a faecal fistula which in tuberculous conditions rarely if ever closes. He admits, however, that a tuberculous Fallopian tube or appendix, if it be the probable focus of infection, must usually be removed if possible. Experience has taught us that the author's teaching on these points is sound. With

reference to the explanation of the good done by the evacuation of ascitic fluid collections in tuberculous peritonitis, the author is disposed to adopt that given by Gatti. This is that the fluid which is always poured out by the peritoneum after the closure of the wound "is actively anti-bacterial and that it exerts a deleterious influence upon the tubercle bacillus." The second debatable point is the employment of mechanical appliances for intestinal anastomosis. These, such as buttons and bobbins, are entirely discarded and abandoned by the author, and he adds that, in his opinion, "the purpose of these mechanical aids has been served, and that their interest is now only historical." In this expression of opinion we believe that most surgeons of large experience will fully concur.

OPERATIVE SURGERY. By JOHN J. McGRATH, M.D., Professor of Surgical Anatomy and Operative Surgery at the New York Post Graduate School, Surgeon to the Harlem, Post Graduate, and Columbus Hospitals, New York. Second edition, thoroughly revised, with 265 illustrations, including many full-page plates in colours and half-tone. F. A. Davis' Company, Publishers, Philadelphia, 1906.

This book serves the double purpose of a surgical anatomy and an operative surgery, every region upon which operations are described being prefaced by a description of its chief anatomical points from a surgical point of view. The illustrations are many and well adapted to the text, which is well written and makes easy and agreeable reading. This is particularly so in the section upon the abdomen, such subjects as gastro-enterostomy, inguinal and femoral hernia, and the surgical treatment of diseases of the small and large intestine, pancreas and spleen being described in detail. We regret the absence of the consideration of umbilical hernia, however. The section upon the urinary organs receives due consideration, the author preferring Young's operation for enucleation of the prostate. On the other hand, we are surprised that such an operation as litholopaxy, which has given such excellent immediate and subsequent results, should not be considered. We note that in cases of general peritonitis following appendicitis the author advises thorough irrigation without evisceration. In the so-called "internal appendectomy," we prefer to cover over the stump of the mesentery with peritoneum so as to guard against subsequent adhesions, etc. We take exception to the statement, so often made, that chloroform is less irritating to the kidney than ether, as, clinically, we have found the opposite to be the case.

W. L. B.

Medical News.

MONTREAL GENERAL HOSPITAL.

The annual meeting of the Montreal General Hospital was held on the 20th February, 1906. The report of the Secretary showed that in the in-door department there were treated to a conclusion last year, a total of 3,237 patients, an increase of 93 over the previous twelve months. The out-door patients numbered 44,504, an increase of 5,015 over the preceding year. This gives a total of patients treated at the hospital during the year of 47,741, or 5,108 more than in 1904.

Of the 3,237 in-door patients treated to a conclusion, 201 remained over from the previous year; 3,216 were admitted during the year, and 190 remained in the hospital at the end of the year. There were discharged from the hospital, and there died in the institution 253. The percentage of mortality was 7.81, or 4.54 exclusive of deaths occurring within three days of admission.

The average number of patients in the wards per day was 199.58, and the average number of days in hospital per patient was 22.55. The aggregate number of days in hospital by all patients was 72,839, an increase of 3,627 as compared with the previous year. The average daily cost per patient was \$1.35, as against \$1.38 in 1904.

Of the in-door patients treated to a conclusion, 2,122 were males, and 1,115 females; and of these 1,596 were Protestants, 1,385 Roman Catholics, and 256 other religions. Of those thus treated 2,725 were citizens, 410 strangers, 98 sailors, and 4 immigrants.

Of the out-door patients, there were treated in the medical department, 10,129; surgical department, 17,157; eye and ear, 5,535; gynæcological, 1,498; laryngological, 3,222; dermatological, 1,922; neurological, 2,683; dental, 197; and emergency, 2,173.

The ambulance made 1,581 trips during the year, in connection with which 352 were cases requiring out-door treatment only, and 9 were false alarms.

In the pathological department there had been performed 216 autopsies, and 1,338 examinations had been made for the attending staff.

The number of applications for the training school during the year was 475, an increase of 65 over 1904. Twenty-eight nurses passed their final examination, making the total number of graduates 261.

The income for the year, \$96,134, though \$2,071 short of the expenditure, was the largest during the history of the hospital.

It was stated in the report of the committee of management, that the Charles Alexander Memorial Fund had reached the sum of \$200,112, and it was understood that further subscriptions were expected.

The former Committee of Management and the Medical Board were re-elected. Dr. George H. Mathewson was elected to the position of ophthalmologist, and Dr. Craig, assistant laryngologist.

PROTESTANT HOSPITAL FOR INSANE.

The annual meeting of the Protestant Hospital for Insane was held on 6th February, 1906. The gross receipts on maintenance account were \$107,447, and the expenditure \$107,496.

The cost per patient per annum for maintenance was \$202.62, or 55½ cents per day. The difference between this amount and the Government allowance was made up by contributions from the public and receipts from private patients, the corporation being bound by its charter to expend all revenue, from whatever source, on the hospital and its inmates.

Dr. Burgess submitted the report of the medical superintendent. It stated that there were admitted to the hospital during the year 190 patients—103 men, and 87 women, making, with those in the institution at the close of the previous twelve months a total of 654—343 men, and 311 women. Of those, received during the year, 83 were private, and 107 public cases. The greatest number at any one time in the hospital was 503, the least 460, while the daily average was 476. There were discharged 103 patients, 46 died, 2 escaped, and 2 were out on trial, leaving in the hospital, at the end of the year 501 patients—262 men and 239 women.

Of the patients received, 113 were natives of Canada, 48 of other portions of the British Empire, and 20 were of foreign birth. Could there be a more striking commentary on the inefficiency of our immigration laws than this record, it was asked, which showed over 49 per cent. of the admissions to have been persons born outside of the Dominion?

Of the 103 discharged, 63 had recovered, 17 were improved, and 23 unimproved. This was a discharge rate of 54.21 per cent., and a recovery rate of 33.16 per cent. on the admissions.

As compared with the previous year, the number of cases admitted was one more; the number treated, 19 more; the daily average in the hospital, 23 more; the number of recoveries, seven less, of improved,

eight less, and of unimproved, 12 more. The number of deaths was 17 less, and the number of escapes the same. The percentage of discharges on admissions last year was 54.21, as against 56.08 in the previous twelve months, and the percentage of recoveries 33.16, as against 37.03, while the percentage of deaths on the number under treatment was 7.03, as against 9.32.

Referring to requirements, it was stated that of those mentioned in the last annual report, the following remained unfulfilled: A separate building for tubercular patients, a nurses' home, a larger amusement hall, a summer-house for female patients, a large workshop, cottages for married employees, and a conservatory. If the increase in population was as great during the present years as it was during the past, to these wants would have to be added increased accommodation for both male and female patients. To provide increased accommodation, two courses were open; either to add to the existent east and west houses, or to erect separate cottages for male and female patients of the superior class and utilize the room at present occupied by these classes for public patients. Considerable extra room might also be got by the erection of a new amusement hall and the conversion of the present one into a ward for quiet, chronic patients.

INTERNATIONAL MEDICAL CONGRESS.

Arrangements are being completed for the fifteenth Congress, which meets in Lisbon, from the 19th to the 26th of April. The principal general addresses will be delivered by Sir Patrick Manson, London; Prof. Brissaud, Paris; Dr. Jose Maria Esquerdo, Madrid; Dr. P. Aaser, Christiania; Prof. Azevedo Sodre, Rio de Janeiro; Prof. Neumann, Vienna; Prof. Prince Jean Tarcharoff, St. Petersburg; Prof. E. von Bergmann, Berlin;

The different nationalities are well grouped, and the delegates from Great Britain, Canada, Australia and the British Colonies will have a common meeting place.

The service of lodging will be in charge of M. Manuel Jose da Silva, Praca dos Restauradores, Palacio Foz, Lisbon, to whom may be addressed all correspondence on this subject.

Applications for membership will be received until the hour of the opening of the Congress and during the Congress, but in order to secure reductions granted by railways and navigation companies it is necessary to apply as soon as possible. All such correspondence may

be addressed to the Secretary General, M. le Professor Miguel Bombarda, Nova Escola Medica, Lisbon.

It is announced that there will be three general *fêtes* and there will probably be several receptions and dinners de gala. A bull fight according to the old Portuguese way will be organized at the expense of the Congress. The definite details will be published at a later date.

A number of Canadians have already decided to attend the Congress. It is requested that any member of the profession in Canada who desires to join the Canadian Committee would at an early date communicate with Dr. A. McPhedran or Dr. W. H. B. Aikins, of Toronto, who will be glad to furnish all available information.

ANTI-TUBERCULOSIS LEAGUE.

A special general meeting of the Montreal League for the Prevention of Tuberculosis was held 17th February, 1906. A series of interesting statistics was furnished by Senator Dandurand. He stated that out of 33,000 deaths in this province by the last returns, nearly 3,000 were due to tuberculosis. Of these 450 were under 5 years of age; 238 between 5 and 14; 777 between 15 and 24; 974 between 25 and 45; 312 between 45 and 59; 124 between 60 and 69, showing a majority of deaths at the most productive and most useful period of life. In Ontario the figures were of a similar character; while in 1901 the proportion of such deaths was still higher.

In 1901 the population of the Dominion was 5,371,000, and the mortality from all causes for the year was 81,000, 9,709 being due to tuberculosis, or about 12 per cent. In the case of 998 schools in this province, 166 were reported as being insufficiently ventilated, and over 44,000 school children more or less predisposed to tuberculosis, lacked ample protection.

HOTEL DIEU.

During the year 1905, 3,148 patients were admitted into the hospital. Of that number 1,200 were surgical cases. In the Out-Door Department for the diseases of the eye, 2,213 patients were treated. The electrical dispensary was very well patronized, but no register was kept. There is no general dispensary at the Hotel Dieu, but the visiting physicians and the house surgeons gave, on an average, 150 free consultations every month.

LA SOCIÉTÉ MÉDICALE DE MONTREAL.

Meeting of February 6th, 1906, Dr. Marien, Vice-President, in the Chair.

After reading and adoption of the Secretary's report for the last meeting, Dr. Dubé read an interesting paper advocating the necessity of declaring to the Board of Health all cases of contagious diseases, a regulation the French speaking physicians too often overlooked. The city should take means to help the afflicted family during the course of the diseases. Otherwise the chief of the family cannot easily comply with the law and not go to his work when isolation is ordered.

Dr. Louis Laberge, the City's health officer, Drs. Ervieux Lesage, Demartigny, O. F. Meunier, J. E. Laberge, took part in the discussion which followed.

Dr. Wm. Jas. Derome reported a case of enteroanastomosis for excision of the colon in a case of cancer.

The committee named to study the question of establishing a Central Board of Examiners, as advocated by Dr. Fortier in a paper read at one of the Society's previous meetings, reported favourably, urging the Provincial Board of Physicians and Surgeons to obtain legislative approval in that respect as soon as possible.

W. J. D.

ROYAL VICTORIA HOSPITAL.

Report for January, 1906: Patients admitted, 292; patients discharged, 246; patients died, 28. Medical, 94; surgical, 116; ophthalmological, 21; gynæcological, 40; laryngological, 21. Out-Door Department: Medical, 705; surgical, 489; eye and ear, 265; diseases of women, 119; nose and throat, 526; total, 2,104. Ambulance calls, 103.

NOTRE DAME HOSPITAL.

For the month ending January, 1906, 187 patients were admitted into the hospital. Of this number 82 were discharged cured; 41 improved or convalescent; 5 not improved; 7 were dismissed without treatment, having refused to be treated.

Twenty-one deaths were registered; of this number one patient died before reaching the hospital and seven others died shortly after their arrival. In the various out-door departments 1,796 consultations were given and the house surgeons gave the first treatment to 144 emergency cases. The ambulance answered 103 calls.

BRITISH MEDICAL ASSOCIATION.

Toronto Meeting, August 21st to 25th, 1906.

1. *Fares, Going Dates and Limits.*—(a) Domestic Business, Certificate Plan Arrangements; free return regardless of number in attendance. Passengers going rail, returning R. & O. Nav. Co., or *vice versa*, rate to be one and one-half fare.

(b) *European Business.*—On presentation of certificate, to be prepared and signed by the Secretary of E. C. P. Association, and countersigned by the Secretary of the Canadian Committee, or the Secretary of the British Medical Association, one-day tickets to be issued at one-half lowest one-way first-class rail fare; round trip tickets at lowest one-way first-class rail fare between all points in Canada. Rates to Pacific Coast subject to concurrence of E. C. P. Association. Steamship lines to advise Secretary what, if any, additional arbitraries are required.

Dates of Sale, July 1st to September 30th, 1906, inclusive. Final return limit, September 30th, 1906.

2. *Extension of Time Limit.*—On deposit with Joint Agent of Standard Convention certificates issued from points in the Maritime Provinces, from all points west of Port Arthur and from points in the United States, on or before August 28th, 1906, and on payment of fee of \$1.00 at time of deposit, an extension of time until September 20th to be granted. Joint Agency to be conducted in the name of G. H. Webster, Secretary, E. C. P. Association, will be kept open from August 21st to September 16th, 1906.

3. *Side Trips.*—Side trip tickets to be sold from Toronto to delegates from the Maritime Provinces, from all points west of Port Arthur and from the United States, on presentation of validated certificate, or deposit receipt, at lowest one-way first-class fare for the round trip, to points in Canada. Dates of sale, August 23rd, to September 1st, 1906, inclusive; Return limit, September 30th, 1906.

Usual additional arbitraries via Upper Lake Steamships to apply, viz., going lake, returning same, \$8.50 additional to be collected. (Going lake returning rail, or going rail returning lake, \$4.25 additional to be collected. Also usual arbitraries via St. Lawrence Route, for delegates desiring to return by steamer, on presentation of tickets to purser, viz., \$6.50 Toronto to Montreal; \$3.50 Kingston to Montreal.

Via Northern Navigation Company, on lines where meals and berths are not included, the rail rate will apply; or lines where meals and berths are included, rate to be single fare plus meal and berth arbitrary.

The British Medical-Association began at Worcester on June 19th, 1832, under the title of the Provincial Medical and Surgical Association. In 1856 the name was changed to that now used. There are now 20,000 members, and \$7,500 is annually given by it in aid of scientific investigation, scholarships and other prospects for the furtherance of scientific medicine.

The committee of management of the General Hospital have placed within the hospital a suitable memorial to its late president, Mr. F. Wolferstan Thomas, to whom the institution is so greatly indebted for his untiring efforts to promote its interests. Through a personal canvass, assisted by the present treasurer, Mr. S. H. Ewing, he collected from citizens about \$120,000, to pay in full the reconstruction of the main building, with the three adjoining wings, and the cost of the Jubilee memorial, known as the Nurses' Home. The action of the committee meets with the general approval.

The Governors of the Montreal General Hospital at the annual meeting adopted a resolution in the following handsome terms:

"The governors of the Montreal General Hospital assembled deeply regret the absence, through indisposition, of their much esteemed friend and colleague, Dr. Robt Craik. Remembering Dr. Craik's useful life, included in which are many acts of kindness for the benefit of his fellows, may be mentioned especially his warm and constant interest in the welfare of this hospital, extending over a period of fifty-five years. The Governors beg, therefore, to convey to Dr. Craik their heartfelt sympathy for him in his temporary retirement on account of sickness, and they fervently express the wish and hope that he may soon be restored to health and strength."

In this desire and hope every member of the profession joins fervently.

Dr. William Christie, of St. John N. B. died on Feb. 8th in his 71st year. He was a surgeon of ability, a graduate of Jefferson College, Philadelphia, in 1864, and devoted considerable time to public life. He was a member of the City Council at the time of his death, had been President of the City Medical-Society and a member of the Medical Council, the executive of the Provincial Society. He was a member of the hospital staff for twenty-years.

Dr. Wm. M. Cameron, of Halifax, died on January 24th.

Dr. John F. Brine, of Canso, N.S., died on January 18th. He was a graduate of Harvard University.

Dr. W. J. Early, of Owen Sound, died on January 25th, of cancer. He had practised there for the last thirteen years.

Dr. George Pringle died at Toronto on the Feb. 16th, aged 72 years. He was born and practised for many years in Cornwall, Ont.

Dr. George W. Thompson died at Toronto, on January 20th, in his 69th year. He had formerly practised at Humberstone, Ont.

Dr. Milton Baker, a graduate of Trinity Medical College, died of cerebral abscess, at Brantford Ont., on the 23rd of January, aged 37.

Dr. Frederick Goodwin of Bayfield, N. B. at Feb. 11th. aged 45 years. He was a graduate of Baltimore Medical-School and, had practised for fourteen years.

Dr. William H. Hand of Woodstock, N. B. died on February 10th of blood poisoning, in his 43rd year. He was a native of New Brunswick, and a graduate of the University of Pennsylvania.

Dr. J. J. W. R. BOYER of Barrie, Ont., died on February 12th of typhoid fever, in his 61st year. He was a native of Cobourg, lived in Holland, graduated in England, practised in Russia, and afterwards in the state of Virginia.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

CHARLES BARRETT LOCKWOOD, F.R.C.S. "Carcinoma of the Breast and its Spread into the Lymphatics." *British Medical Journal*, January 27, 1906.

Speaking from an extensive experience the writer strongly advocates the use of the microscope at the time of operation to determine the true nature of the growth. Attention is drawn to the variation in the rapidity of growth and extension of malignant disease depending, to

a large extent, upon the position of the primary growth. Thus, cancer of a hollow, muscular viscus like the urinary bladder may be very slow in its lymphatic extension, while carcinoma of the breast and malignant disease of the tongue extend very early, in fact, there seems to be hardly any interval between the onset of the growth and its spread into the neighbouring lymphatics. Reference is made regarding the duct cancer, some surgeons believing it to be less malignant than the other forms. The writer believes this idea to be a dangerous delusion, and cites cases to prove his point. Several interesting cases are given to show the manner in which the spread of cancer takes place through the lymphatics and the erratic manner in which this sometimes occurs. He believes that it is probable that cancer may cross in the lymphatic channels from one breast to another, but that it is rash to assume that it may have done so in any particular instance of bilateral tumour. Thus, a cystic fibro-adenoma was removed from the right breast, and five years later a tumour, clinically exactly like the first was removed from the left and found to be a spheroidal celled carcinoma. In another case the opposite condition was noticed. As a result of the excellent work of Handley on the Spread of Cancer, the writer now removes the fascia covering the costal origin of the external oblique if the case be at all extensive in the axillary lymphatics. Frequently the gland most remote from the parent growth will show malignant extension, while those nearer appear to be free. In these cases extension can only be explained by the short circuit system which evidently obtains in the lymphatic vessels. As a result of his experience he now takes away both pectorals and the axillary fasciæ as well as axillary contents of glands and fat. The upper axillary glands can only be satisfactorily explored by removal of the pectorals, the operation is not severe and leaves a good functional arm. If it has spread to the cervical glands a dissection of both anterior and posterior triangles is done. These operations may seem extensive, yet experience has shown that the end justifies the means.

CHARLES H. PECK, M.D. The Operative Treatment of Cleft Palate, with a report of eight cases. *Annals of Surgery*, January, 1906..

This article is beautifully illustrated with seven plates. The operation as described is essentially that of Langenbeck, and when properly performed, is capable of closing the cleft in nearly if not all cases, either in children or adults. The best age to operate is from two to three, the easiest from six to ten. The Whitehead gag and the Rose

position add greatly to the ease of exposure and control of hæmorrhage. The bellies of the levator and tensor palati with their insertions into the palatine aponeurosis should be preserved, but the attachment of the aponeurosis to the posterior border of the hard palate must be divided together with the mucous membrane on the nasal aspect of the velum, as relief of tension is essential, and division of the salpingo-palatine fold of mucous membrane is important to secure this. After treatment should be simple, no cleansing on the palate or in nasal fossæ should be attempted. Feeding by mouth may be commenced at the end of twenty-four hours. The use of the protective is of great value in older children and adults. Of the eight cases, three healed primarily with no defects, one after a secondary suture of the uvula, one completely, save for a small anterior defect purposely left to preserve nutrition of flaps, two very slight defects barely admitting a probe, and one has a defect of the uvula.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

McKENZIE, R. TAIT. "The Anatomical Basis for the Treatment of Scoliosis by Exercise."

Dr. R. Tait McKenzie, in a paper of this title, read before the College of Physicians of Philadelphia, said that in the infant spine there is but one curve, with the convexity backwards, and involving the total length. This curve is best seen in the sitting posture. With the assumption of the upright position a sharp lumbar curve makes its appearance, with the convexity forwards, and the anterior ligaments and psoas muscle are put on the stretch, as the pelvis is tilted forward while the erector spinæ is increased in size and power. This curve is followed by a curve in the upper dorsal region, compensating in character, while a third in the cervical region takes the same direction as the lumbar curve.

These three curves are physiological and are found in the normal adult spine. The integrity of these normal curves is protected against the onset of deformity by three lines of defense of increasing strength, by (1) The muscles forming an advanced mobile series of outposts that can be brought into service powerfully but intermittently; (2) The ligaments, more resistant but less mobile; and (3) The bones which

yield to the influence of deformity only after the other two lines of defense have been carried. After the deformity has altered the bony structure any treatment must be more or less cosmetic in character, aiming at concealment rather than at complete correction.

The muscles that may be used to act on the spinal column, he said, fall into three groups: (1) Antero-vertebral, consisting of psoas, longus colli, scalen and sterno-mastoid; (2) spino-scapular and humeral in two layers, trapezius, and latissimus dorsi, rhomboids, and levator scapulæ; (3) spinal, consisting of the two posterior serrati, superior and inferior, and the erector spinæ.

He pointed out the movements of the spine as flexion, extension, and side bending with rotation. Flexion, he said, is greatest in the lumbar and cervical regions; extension almost entirely in the lumbar and cervical regions, and side bending from the flexed position takes place in the dorsal and cervical regions, with rotation of the bodies of the vertebræ up to the convexity of the lateral curve. Side bending from the extended position of the spine, he explained, takes place in the lumbar region, and rotation of the vertebræ bodies to the concave side of the lateral curve. Rotation was said to be greatest in the cervical region, gradually disappearing through the dorsal. The most freely movable regions are abundantly provided with muscles, and treatment will be directed to the cultivation of them in groups or isolated. In the lumbar region, it was said, that the psoas can be made to act upon the bodies of the vertebræ through its attachment to the femur. The erector spinæ, in the lumbar region can be made to act on both sides at once, or on either one separately, to increase the concavity on the active side. In the dorsal region, the erector spinæ is made up largely of tendons; many of its strands are replaced by ligamentous bands. Action upon the dorsal spine will be obtained through the twisting action of the spino-scapular, and humeral group through traction on the dorsal spines with counter-traction of the pectoralis on the other side. Action can also be obtained by the unilateral development of the respiratory muscles, increasing the capacity of the thorax more particularly on the concave side. In the cervical region, the erector spinæ mass is much specialized and allows of movements in all directions, particularly rotation in which the deep muscles of the sub-occipital triangle may take part.

Dr. McKenzie in reply to discussion stated that the isolation of the muscles is a matter of practice. In many cases a marked amount of isolation could be brought about by starting with a simple movement by which large groups are employed which have a very indirect in-

fluence upon the movement desired. By care and attention it was possible to confine the exercises to one or two single muscles of the group.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

WILLIAM J. ELSER. "A Study of Epidemic Cerebro-spinal Meningitis."
Jour. Med. Research, Vol. xiv., p. 89, 1905.

The author studied one hundred and thirty cases of the diseases which occurred in New York. Of these cases he was able to isolate the diplococcus intra-cellularis in all but sixteen cases. Besides merely demonstrating the organism on cover glass preparations, made from the spinal fluid, the author obtained cultures of the diplococcus in 86 cases. E. finds that there is no difficulty in distinguishing the organism of epidemic meningitis from other organisms which resemble it. The points in its identification are, it can be fairly readily cultured, it is negative to Grams Stain, it never forms chains and it is feebly pathological to animals. Of 41 cases examined, the author was able to isolate the specific organisms from the blood in 10 cases. The organism too was isolated six times from the nose or throat in 22 patients. E. finds that the diplococcus disappears rather early from the nose and throat, as the positive results occurred during the first week.

Twenty-three of the cases came to autopsy, and in these five had acute sero-purulent, or purulent-pericarditis. This series of cases seems to indicate that pericarditis is a frequent complication of epidemic cerebro-spinal meningitis.

It was found that status lymphaticus was an important factor in determining the rapidly fatal issue in the disease, as it was present in one-fourth of the cases coming to autopsy.

HUGO RIBBERT, Monograph. "The Etiology of Cancer." (From the *Path. Inst. Bonn*), 1905.

Ribbert repeats his doctrine that cancer is only reproduced through the growth of its own elements, and that the spreading of cancer is due wholly to a multiplication of the cells in the original neoplasm. The first cells of a tumour, he holds, may be either embryonal rest or postembryonal aggregations of cells which have been separated from

their original site. Ribbert admits the similarity in appearance of certain granulomata with new growth, but finds no reason to support the parasitic theory, as the experimental transplantations of cancer can be explained on other and more solid grounds. R. also opposes the view taken by Kelling that the cancer cells themselves are the parasites, which gain entrance into the body from without. R. holds that all cancers have their origin in epithelial cells which have separated from their normal structure, and have lost their functional relation to their normal tissue. The separation of these epithelial cells results from an inflammatory (or other) change of the connective tissues about, which then withdraws the restraining influences of this tissue on the epithelial cells. These latter cells are now liberated to proliferate beyond their normal scope, and this is the beginning of the cancer. Not only can these cancer cells proliferate into the altered connective tissue, but they also acquire the property of advancing into normal fibrous tissue. R. holds that the alteration in the connective tissue also produces changes in the epithelial cells, so that these are of a more embryonic type. For this he prefers the name "ruckschlag" rather than metaplasia.

H. WOLFERSTAN THOMAS (McGill). "The Experimental Treatment of Trypanosomiasis in Animals. *Proceedings of the Royal Society*, 1905, Vol. 76, p. 589.

Of the various therapeutic agents which have been tried in cases of trypanosomiasis, arsenic and trypan red are the only ones exhibiting a marked influence on the parasites. However, it was found that sodium arseniate when injected subcutaneously produced sloughing and further, was very liable to produce untoward and toxic symptoms. Thomas obtained the best results with a compound of arsenic and aniline (meta-arsensaure anilid, atoxyl). In all his experiments he found the arsenic-aniline compound of best service, principally as it can be given in large doses over a length of time. The trypan red given either alone or combined with other drugs has a tendency to cause nephritis and hence must be used with caution. Thomas holds that the arsenic-aniline compound is indicated in human trypanosomiasis.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The sixth regular meeting of the Society was held Friday evening, December 15th, 1905, Dr. F. R. England, President, in the Chair

LEUKAEMIA.

J. B. McCONNELL, M.D., and J. D. McLEAN, M.D., showed a living case of lymphatic leukaemia. Dr. McConnell read the case report.

E. J. O'CONNOR, M. D., also presented a living case of leukaemia, this case being of the spleno-myelogenous type.

E. J. O'CONNOR, M.D.—With regard to the treatment. I have been giving this patient Arsenic in large doses, 12 drops three times a day. His general condition is improving and he thinks his abdomen has gone down about an inch and a half in circumference. This treatment is the only thing I could think of, and I would be very grateful for any suggestions.

F. R. ENGLAND, M.D.—I cannot remember having seen a spleen as large as this before. I would like to ask if Dr. O'Connor had noticed any evidence of trouble in the bones, tenderness, etc. As to Dr. McConnell's case I am very much surprised that the patient was able to put in an appearance here to-night with only 25 per cent of haemoglobin. It seems to me remarkable.

E. J. O'CONNOR, M.D.—With regard to the bones, I have examined them very thoroughly and can find no evidence of tender spots anywhere: everything seems normal.

DEFICIENT HUMIDITY OF THE ATMOSPHERE AND ITS EFFECTS UPON THE RESPIRATORY TRACT.

T. A. STARKEY, M.D.—This paper will be found on p. 180.

E. J. O'CONNOR, M.D.—I would like to ask what Dr. Starkey would advise beyond keeping the windows open for a reduction of this dryness in the house air. The windows cannot be left open all the time in winter. Would Dr. Starkey suggest that a pan of water be left in each room?

LAPTHORN SMITH, M.D.—As to personal experiences, asked for by Dr. Starkey, I think it would not be hard for us to give such for we constantly meet with them in our professional visits. It is my impression that this dryness in the atmosphere is limited to only one class of

society, that is, the rich. The working classes who form the bulk of the population live within a short radius of the kitchen stove on which all the cooking is done and consequently the atmosphere is supersaturated with moisture; those living in a flat still have their heat supplied from the kitchen stove; those in self-contained houses, or houses with two flats use a hall stove on which is invariably kept a kettle of water evaporating. The class using the old fashioned hot air furnace are fairly well supplied with moisture from a large evaporating pan inside of the casing of the furnace from which five or ten gallons of water are evaporated a day and carried with the air to all parts of the house. It would then seem that the expensive hot water furnaces of the rich are most responsible for this dryness in the air. One rich patient told me that all the members of her household were suffering from more or less discomfort in the nose and throat; and another feature was that the expensive furniture such as Japanese cabinets which had taken a workman a lifetime to glue together would after a series of explosions be found in a heap on the floor from the excessive dryness of the atmosphere. I advised her to have zinc reservoirs placed behind every radiator in the house and soon a change took place in the condition of affairs, but it took five gallons of water every day to replenish these pans. For myself I have taken a watering can and sprinkled the carpets before retiring at night when the atmosphere was very dry. It does not hurt them because they dry in a few minutes. I am a little surprised to hear that the outside air on frosty days has much moisture in it: I have always understood that with a temperature of ten to twenty below zero the air was devoid of moisture. The plan of keeping the windows open in severe weather is not practical as the danger of freezing the pipes is too great and even then the air though fresh is not moist.

G. P. GIRDWOOD, M.D.—There is not doubt that the question of relative moisture is an important one: in the summer time when the temperature is warm we may get the moisture up as high as 90 per cent. and even full saturation, 100; but in winter time we get the moisture frozen out. It is not a question of absolute saturation but one of relative saturation of the atmosphere. For myself and my household we sleep with a good many of our windows open and have always a current of fresh air from the outside. But still when the temperature is raised it is a long way below saturation. Supposing the temperature to be below zero, when this is warmed you will get a saturation of about 30. One method of increasing the humidity in the house is to hang up wet sheets here and there. For my own part I would say that the dwellers in tents suffer

from none of these things. Another matter which Prof. Starkey did not touch upon and which Prof. Rutherford has suggested and that is the question of the amount of the radio-active matter in the atmosphere in particular places, and curiously enough he found that the radio-active matter is much more in houses than in the outside air and certainly it is a factor which will have to be taken into consideration before long.

A. H. GORDON, M.D.—I would like to ask what the relative amount of naso-pharyngeal involvement is in climates which are dry and climates which are moist. In a section of a country where there is a great amount of rainfall I found catarrhal troubles, both nasal and bronchial, very common and such cases almost invariably got better of their catarrhal condition on removing to a high altitude where supposedly the humidity of the atmosphere was a great deal less.

WESLEY MILLS, M.D.—It seems to me that before we get a final explanation of the condition caused by dryness, we must remember as has been pointed out that the mucous membrane is naturally moist and that a dry air acts much the same as an irritating gas, not chiefly directly, I think, but by reflex action, causing dilatation, probably; certainly in some stage dilatation of the blood vessels, so that we might put the result down to really the same final cause, as in the case of injurious gases, only dry air acts more slowly and takes a longer time to bring about a very decided result. The question that Dr. Gordon has asked is a very pertinent one because I have noticed that in places in which there is a great deal of rain catarrhs are very common. As to Dr. Hamilton's question with regard to nasal speech, it may be said that first of all, it is not as common in Great Britain as on this side of the Atlantic; secondly that while a certain proportion of cases may be accounted for by the condition of the mucous membrane, most of it is not any more than the higher pitch of American speech, to be explained by catarrh. Speech is largely determined by unconscious imitation and that begins very early. Perhaps it may be originally traced, as some have suggested, to the Plymouth fathers with their peculiar intonation; but however that may be, through many generations we have been imitators of a high pitched and more or less nasal speech; and it is becoming I think if anything more prevalent in Canada, whether that be due to proximity to United States or not. The conclusion I have come to is that the principal cause is not the condition of the membrane, but to the fact that we do not particularly dislike nasal speech and that very little attention is paid to elegant speech on this side of the water as compared with what is regarded as proper in educated persons in other countries, and that as

long as we remain so careless in regard to speech, so long for instance as children can pass through a college course speaking as they do and get degrees, we must have the conviction that musical and pleasing speech is not one of the subjects to which the people on this side of the Atlantic generally devote very much attention.

J. B. McCONNELL, M.D.—As to excessive dryness of the air in dwell-houses no doubt it is a very important hygienic defect and one which is largely accounted for the autumn catarrhal affections we meet with here. Undoubtedly people in cities suffer a great deal from improper heating, and coal gas is an important factor as well as the dryness, producing unwholesome condition. A great many houses are heated by coal stoves and some of them are often too large for the house and the draught key in the pipes is invariably kept closed so that a certain amount of gas is constantly escaping. The lighting of the houses with gas too is exceedingly injurious, it rapidly renders the air of a room unfit to breathe unless it is large and well ventilated. A great work would be done by this Society if it made an effort to educate the public as to the hygienic heating and lighting of their houses. It would be a good thing if we had a superintendent of buildings who would look after this sort of thing and see that houses were built properly from a hygienic point of view especially in the poorer districts. A vast amount of illness will be escaped from in cities where the masses live in houses where perfect hygienic conditions prevail.

G. A. BROWN, M.D.—I would like to ask Dr Starkey if he took into consideration the dust as an irritant; the air being rather dry these particles might all the more be floating around.

DR. BIRKETT.—This paper of Dr. Starkey's is, I think, full of a great deal of interesting information, to those who are especially interested in the diseases of the upper respiratory tract. The view which Dr. Starkey puts forwards as to being the possible cause of rhinitis, either in its acute or chronic form, is to me a very acceptable one. I have always held that many affections of the nose and throat are undoubtedly due to a deficient humidity of the atmosphere, and Dr. Starkey has in this paper proved, I think, pretty conclusively that his theory is correct, and speaking from a practical standpoint, I have had the opportunity of frequently applying the suggestion here made, and with good results; cases of acute and chronic rhino-pharyngitis, which have resisted the ordinary methods of treatment giving way by increasing the humidity of the atmosphere of the sleeping-room. I feel certain, therefore, that if we would direct our attention to this one point in particular, that many obstinate cases of this kind would show marked

signs of improvement. Personally, I feel indebted to Dr. Starkey for the interesting manner in which the subject has been brought to our notice.

R. A. KERRY, M.D.—Dr. Starkey's paper has brought forward a very important point, namely, the condition of chronic hyperæmia of the mucous membrane. As we all know the function of the mucous membrane is to supply both warmth and moisture to the air inspired. In the house, with its air so deficient in moisture, the mucous membrane is kept constantly in a hyperæmic condition to furnish sufficient moisture to the air inhaled; and on emerging into the air in winter time, this condition is still maintained as a relatively large amount of blood must pass to the parts to afford the heat necessary to warm the air. We have thus for many months a sort of vicious circle established, causing in course of time alteration of structure and in advance cases absorption of bone.

We all frequently have cases of tinnitus aurium under our charge, and the majorities of these are nothing but the result of processes instituted under conditions similar to those which Dr. Starkey has described, and showing in several cases atrophy of the membrane from the anterior nares right through to the tympanum.

Many of these cases become infectious, from the horrible œzenas down to the ordinary muco-purulent affection of the naso-pharyngeal tract, which is so often seen. Considering how very common deficient hearing is, and that the altered mucous membrane affords a favourable means for entrance of various germs, the question of checking the spread of infection and affording pure air should be seriously taken up by the profession at large and urged upon the health authorities.

T. A. STARKEY, M.D.—With reference to the dust in the air this is a very important condition, but I think that the marked symptoms mentioned in the cases which I have described are not due to this, though certainly habits of living and the manner of conducting the household with reference to the dust problem have their effect upon the general health of the inmates. As to the combustion of coal gas, and gas escaping from furnaces, this is another important question, but rather a little outside of the matter which we have taken up. I may say that the bad condition of the atmosphere caused by the combustion of coal gas undoubtedly tells upon the children who gradually lose vitality and strength during the winter months. The Royal Sanitary Institute proposes to take up this whole question of ventilation and heating, including the combustion of coal gas.

I think Dr. Mills' answer as to the intonation of the speech of the

Americans generally, is quite true, it is a question entirely of habit as can be easily proved.

Regarding the prevalence of catarrh in moist climates, as Dr. Kerry's remarks show that the nasal mucous membrane attempts to regulate the moisture and warmth of the air before entering the lungs, and if you give it too much work or no work at all it is put out of gear, so to speak. In a very moist atmosphere the mucous membrane attempts to give off the necessary amount of moisture from the body to maintain the natural equilibrium and that is the reason why you get sponginess and swelling of the nasal mucous membrane under these conditions. Means to be adopted to get rid of this dryness in the atmosphere form a large question and various plans suggest themselves, for those who use hot water coils the only remedy practicable at present is to place pans containing water around the house, etc.; one thing is certain that the usual methods of procedure are nothing like sufficient, and it is not surprising, as has been remarked that five or six gallons of water should be taken up daily. With steam coils the difficulty could be got over in part by turning on a small tap and allowing the steam to escape. As to the hot water coils a special apparatus will have to be arranged where you get a sufficient amount of surface from which to evaporate the water; this is being talked of, but could not be generally adopted obviously for some time to come.

In any case, the suggestions I have made for supplying more moisture to the atmosphere in houses can only be considered as tentative. The whole question is a very large one, and we shall have to wait until the sanitary engineers and architects gets their heads together and evolve some practical scheme to overcome the difficulty.

As I have remarked previously, the Royal Sanitary Institute is going to take up the matter, and, being composed of the necessary experts, I fully expect that ere long a successful solution of the problem will be attained.

CHOREA.

RIDLEY MACKENZIE, M.D.—Chorea in a child two years of age. This paper appears at page 179.

F. R. ENGLAND, M. D.—I had a case some years ago of a child seven months old with endocarditis. Rheumatism is very common in children. There were no articular symptoms in this case and no chorea, but I looked upon it as rheumatic endocarditis.

LUNG STONES.

JOHN McCRAE, M.D.—I have here two "lung-stones," given me by Dr. F. R. England.

Lung stones are formed, sometimes in the bronchi, especially in cases of bronchiectasis, sometimes in the lung tissue, and sometimes in the bronchial glands; they consist of calcareous deposit or degeneration; when it occurs in the bronchial gland or lung tissue it may come through and be expectorated. Sometimes it causes that peculiar spasmodic pain which is among the Germans, called bronchial colic.

F. R. ENGLAND, M.D.—These bronchial stones I received by mail from a patient who consulted me in September for a chronic and distressing cough. The patient went home and soon afterwards, during a severe fit of coughing expectorated this calcareous mass. He is a large man about 58 years of age, nothing definite could be made out on examination to explain the irritating and harrassing cough. I thought there was some arterio-sclerosis and suspected a possible thoracic aneurysm. Examination of the throat was negative. The cough has now practically left him, and his general condition is much improved.

FIBROIDS OF UTERUS.

F. R. ENGLAND, M.D.—This specimen is a uterus showing multiple myo-fibromata, and is interesting in that it shows the three clinical varieties, the subserous, intramuscular and submucous growths, this last the largest and the one which caused the symptoms leading to removal of the organ. The patient, aged 35, nuliparous, has for the last 16 years suffered from dysmenorrhœa, and for the last four years from repeated hæmorrhages, and latterly the bleeding was controlled with a great deal of difficulty. Medicines had little or no effect, hysterectomy was therefore advised as the only means left for satisfactorily dealing with the case.

The ninth regular meeting of the Society was held Friday, 2nd February, 1906, Dr. F. G. Finley, Vice-President, in the Chair.

LIVING CASE OF CHOLELITHIASIS WITH FAT NECROSIS.

J. ALEX. HUTCHISON, M.D., presented this living case.

PANCREATITIS.

J. M. ELDER, M.D.—Pancreatitis, from a surgical point of view, with reports of some cases.

JOHN McCRAE, M.D.—There are three questions which seem to me of interest to ask. The first is with reference to the glycosuria. Is it

not so that glycosuria occurs when the islands of Langerhans are affected, and is absent if they are not?

Is fat necrosis really a dangerous condition *per se*. Is it not so that fat necrosis can exist for a considerable time without microscopical evidence of its causing any trouble.

A third point is the use of early operation in pancreatitis. The pancreatic juice apparently has no power against living functioning tissue, *e.g.*, the duodenum does not necrose though pancreatic juice flows over it, and the pancreas itself does not necrose. At post mortem pancreatic necrosis begins almost immediately. Here it would seem then that early operation opens up the pancreas and permits drainage, that is, one operates before the tissue dies and recovery takes place. Once started this necrosis is cumulative and will go on until the whole organ is practically destroyed. Is not the usefulness of early operation that it prevents the destruction of tissue becoming complete, and the tissue from becoming liable to necrotic change?

J. ALEX. HUTCHISON, M.D.—To those not particularly interested in this subject it may be said that surgical literature to-day is abounding in descriptions of the various clinical, pathological and bacteriological conditions developing out of this subject. A number of noted men during the past three or four years have written very able articles upon it, particularly in the English speaking world, and more especially Mr. Mayo Robson, whose address before the Canadian Medical Association last year was on this subject. In Dr. Elder's case, while agreeing in many respects with my own, one can see some very definite differences. Dr. Elder operated for possible obstruction, I operated for a condition of general peritonitis involving the upper part of the abdomen, the cause of which was very uncertain, possibly gall stones or appendicitis, from the history of a previous attack for which she was treated in the Royal Victoria Hospital two years before. The pain was never localised, being present at times low down in the left lumbar region and again over the gall bladder. The onset in both cases was much the same, very severe, but the peculiar labour-like pains in my case were certainly unique. The fact of both cases getting well I think is due to the early operation and drainage. However, Robson speaks of the benefit which comes of simple cholelithotomy, the calculi being frequently the cause of the obstructive condition. The common bile duct can be obstructed often without producing any pancreatic change, as was shown in a recent case under my care where I operated for gall stones, removing one stone from the ampulla of Vater through an incision in the duodenum after the method originally suggested by McBurr-

ney. It was shown that there was a common canal and that the stone could easily have been the cause for obstruction of the pancreatic duct. We were both very fortunate in having had recoveries. With the limited number of cases which have come under observation in Montreal it is curious that these two should have presented themselves in the same ward at about the same time.

RIDLEY MACKENZIE, M.D.—I have known Dr. Hutchison's patient for some time, as she has been at the hospital quite frequently, and I do not think I ever saw a more desperate case after operation.

E. W. ARCHIBALD, M.D.—Dr. Elder is to be congratulated upon giving us such a good *résumé* of a subject that is interesting the medical world very strongly at this time. In my own mind there is a doubt whether the pendulum is not swinging a little too far in the direction of ascribing pancreatic affections to primary gall bladder trouble. It seems to me that not infrequently the order of things is the reverse. In a case of acute hæmorrhagic pancreatitis which I reported before this Society, it was remarkable that while every clinical symptom pointed to gall bladder trouble, that is, common duct obstruction, such was absolutely not the case, except in so far as it was secondary to swelling of the head of the pancreas. This man had had five attacks in previous years, all supposed to be from gall bladder. Opie's theory, which is so attractive because it is so mechanical, is very apt to make us forget that there exists not infrequently a primary pancreatitis, to which a secondary gall bladder trouble may be superadded. The quotation from the article by Thayer recalls a late paper by von Mikulicz in which he referred to a case operated on in Boston. It was one of very acute pancreatitis in which operation was undertaken very early; a large pancreas was found and multiple incisions of its capsule were made, with recovery. Of course one such means little; at the same time it suggests the possibility that even these very acute cases which are supposed to be inoperable may quite possibly, by early operation, be saved.

J. M. ELDER, M.D.—As to all cases of pancreatitis being due to cholelithiasis, I certainly did not intend to make that statement. For example, I do not think there is any connexion at all between this and the acute hæmorrhagic form. What I intended to state was that, as Robson shows, many of the cases of so-called catarrhal jaundice are really cases of chronic pancreatitis to which the jaundice is secondary; and that infective pancreatitis is often a sequel to infective cholecystitis or cholangitis. As to fat necrosis, I quite agree that there is nothing essentially dangerous in fat necrosis; but the danger is that where you get necrosis or digestion of fat, you are never sure that it will always

stop with the fat, and that it may go on to digestion (necrosis) of the walls of the alimentary tract; or that, short of that, it may act as a direct poison to the muscular fibres of the bowels, causing paresis and symptoms of intestinal obstruction. It is no unusual thing to find after operations upon the stomach, where the pancreas may have been accidentally wounded at operation, that the whole line of sutures has been digested away, with fatal result, of course. As regards fat necrosis. I would refer to Bergman's System of Surgery, Vol. IV, p. 720. Fat necrosis is most frequently seen in connexion with hæmorrhagic pancreatitis, not in the infective form where one would expect to get it most often, because here you have tissues lowered in their resisting power by suppuration.

"AUTOMOBILE FRACTURE."

E. W. ARCHIBALD, M.D., presented the notes on this condition.

DR. D. A. SHIRRES presented two specimens of cerebellar tumours, and accompanied them by a demonstration.

F. G. FINLEY, M.D.—I would like to add a word of appreciation of the very clear way Dr. Shirres has brought before us the diagnosis of intra- and extra-cerebellar tumours. Like all differential tables they are subject to exceptions and it is of course easier on paper than in actual practice to come to a diagnosis in many of these cases, and there are some where one is in doubt as to the location. I have found difficulty at times in determining whether a tumour is in the frontal region or cerebellar. I would like to ask Dr. Shirres as to whether the auditory nerve was tested with the high-pitched tuning forks; I have found evidence of nerve deafness only obtainable with the high pitched forks in Meniere's disease. As to polyuria, Fletcher, of Baltimore, has recently called attention to a fact which has been known for a long time, that some cases of diabetes insipidus owe their origin to cerebral syphilis.

M. LAUTERMAN, M.D. I would like to ask Dr. Shirres if he has any record of the examination of urine in these cases.

My reason for asking, is that I have a case under observation at present which exhibits most of the symptoms described by Dr. Shirres as being present in his cases, *i.e.*, falling to one side, vomiting and optic atrophy, I am satisfied that there is a cerebellar lesion, most likely a gumma; I may say that my diagnosis in that respect has been confirmed by two of my confreres who saw the case with me in consultation at different times, as well as by the so-called therapeutic test, as the pa-

tient has improved very considerably during the ten weeks he has been on anti-specific treatment. The especially interesting feature of this case was that when I first saw him, the urine of which he voided from 175 to 250 ozs. daily, contained sugar, as improvement took place this symptom disappeared, so that the urine is now entirely free from sugar, although, as previously mentioned, very much increased in quantity. I would therefore be very much interested in learning if there has at any time been any evidence of glycosuria in any of Dr. Shirres cases.

The tenth regular meeting of the Society was held Friday evening, February 16th, 1906, Dr. F. R. England, President, in the Chair.

A CURE FOR TUBERCULOSIS.

G. A. BROWN, M.D., read the paper of the evening. Dr. Brown gave full details of his method of treating tuberculosis by the injection of iodoform into the system. This study he had begun in 1894, and up to the present he had treated quite a number of cases of pulmonary, laryngeal, cutaneous and joint tuberculosis with remarkable results. Dr. Brown illustrated his paper with charts showing the results of the injection on the temperature, urine, blood and blood pressure, also two diagrams showing the condition of the larynx before and after treatment in the case seen by Dr. Birkett.

In connexion with this paper Dr. Brown exhibited eight of his cases before the Society; these were:

1. A woman, aged 34, case of tubercular lupus, of nine years standing. Patient had been treated at various skin clinics and had also undergone a course of Finsen light treatment, all with no benefit. After the first injection there was very marked improvement, until now the skin has become soft and pliable. The tubercles are seen to undergo fatty necrosis and to dry up, and the part gradually to become white and skin velvety.

2. Tubercular ulcers of the shoulder and upper arm, all healed.

3. Lesion of the larynx. Came under observation last June with tubercular laryngitis; the lesion is practically almost cleared out.

4. Tubercular adenitis.. Child. When she came under observation there were on both sides masses the size of one's fists. After injection the diminution has become most marked and now but little enlargement remains, for one could not expect complete subsidence in such badly diseased glands.

5. Young man, pulmonary tuberculosis, all the family died of it. Patient has had but one injection, but the improvement from this has been most marked. There was constant cough for a year, spitting blood and hæmorrhage for one week. After the injection the blood stopped: there is now only a little cough in the mornings and the appetite has greatly improved.

6. Woman with pulmonary tuberculosis: softening in left apex. Four months after treatment she was in perfect health.

7. Woman, granuloma of both cords, could not talk or eat; patient in a very wretched condition. Now is able to talk, eats well and shows wonderful improvement in every way. Expectoration has ceased, and only coughs in morning.

8. Tuberculosis of the foot. Complete cure.

H. S. BIRKETT, M.D.—With regard to Case No. 3, I saw this patient about five weeks ago and was asked for a diagnosis. The objective symptoms were those of a tubercular condition of the larynx. There was a definite granuloma occupying the greater portion of the left vocal cord on its upper surface, and posterior to that and just in front of the left arytenoid cartilage was a superficial ulceration. The appearance of the larynx was anæmic, whereas the trachea showed a marked hyperæmia, which is so suggestive of tuberculosis. I did not see this patient again until to-day, and I must say the change is a marked one. The granuloma, which was almost equal to a small pea, is probably now the size of a millet seed, the superficial ulceration has quite disappeared, though there is still ulceration occupying the inner surface of the left vocal cord and the conditions are yet those of a definite tuberculosis, but which have certainly undergone very marked modifications.

H. A. LAFLEUR, M.D.—I am sure we are very much indebted to Dr. Brown for taking this trouble in bringing these cases before us and his paper shows evidence of a great deal of work. The question is whether one can subscribe entirely to his views, particularly as regards his results. One would like to know a little more detail of the history of the pulmonary cases. Dr. Brown mentioned a cure after four months in a case in which softening had occurred. It is generally accepted in these cases that there is a very long process of repair, and I doubt whether in real softening one could possibly get well in so short a space of time as four months. I have seen one pulmonary case where cure occurred in four months but there was no softening at all, that is no tuberculosis of the second stage merely an apex rale with many tubercle bacilli in the

sputa. Moreover in a case that has had softening, after it is supposed to be cured there ought to be some indications of the scar; here there is a little rough breathing under the clavicle but that is all. Then again I find the patient has a temperature of 99. Now we are accustomed to think of even small elevations of temperature as indicating activity, so that I think it is certainly an unjustifiable inference that if this patient has had tuberculosis and still has a temperature of 99, that she can be considered cured. Patients with this temperature in sanatoria are not even allowed to go about. I would like to ask if the expectoration was definitely proved to be tuberculous, that is, if tubercle bacilli were found in the sputum. As to a case being cured after four months, I think that is a little premature; it may be an arrested case. At least two years should elapse with no recurrence before one can look on the case as cured. And even then recurrences are not infrequent.

A. J. RICHER, M.D.—I would like to endorse the views given out by Dr. Lafleur with regard to the word cure in these cases. It has been said that a man is cured of pulmonary tuberculosis after he has been dead a few years. We accept the word cure in lesions of pulmonary tuberculosis after we have found the evidence on the post mortem table. We often confuse the terms "arrested disease" and "cured." I may add, however, that though the antiseptic treatment of tuberculosis, especially with iodoform and iodine, is certainly no new thing, yet, there is no doubt that Dr. Brown has applied these in a new way after lengthy and arduous work, and he has been able to find a method whereby iodine may be introduced into the system in such a manner as not to cause poisoning in any form, that is, anæmia or lesions of the nervous system, and induced "arrest" or "cure" of the tuberculous lesions present he has done a great work. If he can prove this there is no doubt it will mark a very definite advance in the treatment of tuberculosis.

WESLEY MILLS, M.D.—I am under a similarly strong impulse like to the Englishman who, on seeing a man drowning, exclaimed, "Oh, that I had been introduced to him that I might save him." I want to cry out: "Oh, that I were a practitioner! that I might claim the right to say something." I confess I do not sympathize with this extreme caution in regard to this work. It is true we did hear of these remedies long ago, and perhaps wrote the names of them down in our note books as students, and speedily forgot them. But here is a man who has shown results of which, if a surgeon had effected them, you would have marvelled. I think Dr. Brown is to be congratulated: and even suppose that everything one could possibly desire

is not attained, yet he has taken a remedy, the mere existence of which was all we knew, and he has made practical applications of it and has placed the cases before us. The patients themselves tell their own story. Dr. Brown is certainly to be congratulated.

J. B. McCONNELL, M.D.—Up to the present time, as far as we know, there is no recognized cure for consumption, and I am sure it would mark a very great advance in medicine if one of our members were to be instrumental in giving us one. About one percent of tuberculous cases recovered one hundred years ago; by modern methods, which we know are largely hygienic, and work along the lines of fortifying the system in order to overcome the tuberculous process—which has such a very great tendency to healing in itself—we now have a very much larger percentage of recoveries, and improvement, ranging from 25 to 75 per cent, but we are still far from having such control of the disease as Dr. Brown believes we have in iodoform. I certainly did not expect that it was one of the old remedies we were to hear of tonight. We know that iodoform and iodine are of value. The iodide of iron has been used in strumous conditions for decades. In my early years of practice iodoform was the only remedy that was supposed to be of any use in tubercular meningitis, and the virtue of cod-liver oil in tuberculosis was supposed to be due to the iodine it contained. Dr. Brown has apparently shown some good results in his new method of using iodoform; but I think that we would be asking too much of him to expect that he would get absolute cures. I think that if he has brought before us a method which tends to cure, and produces such marked improvement as has been shown in the cases presented this evening, it certainly will be a great gain. The cases we have seen here tonight are not typical of the phthisical class that we see sometimes. They are mostly florid, and healthy-looking, subjects, and therefore would likely respond any approved method of treatment. We would need to have much further experience with the method before we could regard it as a cure. The action of iodine we know is tonic and alterative, and we generally use it for the dissolving of inflammatory thickenings, and glandular enlargements. A cure in phthisis is brought about largely through the production of fibrous or cicatricial tissue about the diseased focus. Would not iodine tend to lessen this conservative process? And the fatty degeneration which Dr. Brown says occurs so speedily after the use of the iodoform if the bacilli are not at the same time destroyed, might it not result in their dissemination, as occurs sometimes after the use of tuberculin. In the adenitis case there is certainly a marked improvement, but I have seen a like result from iodine, as we ordinarily use it, combined with a general building-up treatment. We need much

more evidence before we can regard potassium, or sodium iodide,—which is the condition in which they would reach the tissues whether iodine or iodoform was used—as a specific, unless it can be proven that, besides their alterative and germicidal value, they have specific virtues not hitherto recognized.

G. A. BROWN, M.D.—With regard to the bacilli being found in the sputum, I might say that it was examined by Dr. Williams and reported by him to contain numerous tubercle bacilli. Here the rise of temperature might be accounted for by the excitement coming here, as there has been no temperature for some time. One must appreciate the point in following these cases out, that there was a definite action every time after the injection. One saw these little fatty masses appearing in the tubercles, and when they ended the tissue would contract and whiten out as scar tissue. Consequently, if one pushed the drug long enough one must remove all the tubercular tissue. Here is a man with a tubercular laryngitis doing his work, the larynx is healing, contracting out and he is in good health. In the intervals between the injections, iodine in water and iron are administered; the latter is taken up quickly, they start right away to eat well and the skin becomes velvety. As to the action of iodoform, I do not think this has been rightly appreciated. In the reports one usually reads, it has been supposed to be due to the decomposition of the iodoform and is a local action of the iodine. The true action of iodoform has not been recognized; this definite action on the tubercle, in which it undergoes fatty degeneration is absorbed, and becomes scar tissue is constitutional. The important point is that most of those people have got well here in the city; they are going around doing their work. Of course it is bound to take time in extensive softening or even fairly marked softening, but the result is there. In Mrs. K.'s case there was granuloma of larynx and very marked softening; she could not eat and could not talk; that was a year ago. If one realizes the reaction which takes place, that a certain definite thing must occur, consequently, when the case is cured, or apparently so, if you are not sure of it; you can continue time and again until there is no doubt that every tubercle in the body must be eradicated. The same definite reaction occurred in this lupus of the face after every injection, and it must come to a definite successful conclusion in time.

APPENDICITIS SIMULATING TUBAL PREGNANCY.]

A. LAPHORN SMITH, M.D., read the report of this case.

HAMILTON MEDICAL SOCIETY.

The regular monthly meeting of the Hamilton Medical Society was held on the 7th February, the President, Dr. Olmsted, in the Chair. After routine business was transacted, the following programme was presented:

- 1—Pathological Specimen, Hour Glass Stomach; I. Olmsted.
- 2—Deciduoma Malignum; D. G. Storms.
- 3—Epidemic Jaundice; Dr. Addison, St. George; Dr. McGregor, Water-down.
- 4—Report of Case; Dr. Griffin.
- 5—Acute Articular Rheumatism; Dr. G. S. Glasco.

Exhibition of Pathological Specimens.

The specimen of hour glass stomach shown by Dr. Olmsted was a comparatively rare condition, of which not many are reported. It showed *posteriorly* a cicatrix of an old ulcer.

The case reported by Dr. Storms was that of a woman who, in her ninth confinement, had several profuse hæmorrhages—which led to a diagnosis of *leciduoma malignum* being made. The following history was given:—

Woman, aged 42, nine children, convulsions with three of them—marked albuminuria. Twenty-three years ago had a ventral hernia in which the uterus became prolapsed through the abdominal recti, and in the erect position hung so low as to turn the cervix nearly vertical and to interfere with walking. Labour came on September 18th, 1905, and was extremely difficult, lasting four days. The uterus was in such a position that the handles of the long forceps when locked, were within the vulva, out of sight. Recovery was perfect till the 10th day, when a profuse hæmorrhage occurred, which blanched the patient. Ten days later a second hæmorrhage occurred which left her helpless. Scrapings were then taken from the uterus and a diagnosis of malignancy was made.

Operation, October 18th.—Hysterectomy by abdominal route. Recovery perfect, except for a phlebitis which affected both legs successively. Diagnosis was established on the following points:—

(1) Hæmorrhage occurring late after the confinement, and without other obvious cause.

(2) Suddenness of hæmorrhage.

(3) Cachectic appearance of patient.

(4) Examination of uterus, and microscopic examination of scrapings.

A paper was read by Dr. Addison of St. George, Ont., on "Epidemic Jaundice."

This disease has been very prevalent in this part of Ontario during the last few months, nearly every practitioner reporting cases.

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IODINE IN THE TREATMENT OF TUBERCULOSIS.

BY

GEORGE A. BROWN,

Physician to the Montreal Dispensary.

Consumption cannot be cured, is the statement which was heard thirty years ago. Consumption can be cured, is the statement which is prevalent to-day. Both statements are equally true, and equally false. Some cases can be cured, and some cannot, is the truth. Yet, physicians to-day approach a case of consumption with new confidence, and patients bring to their aid a new hopefulness.

The progress of knowledge has been along two lines, towards the discovery of a specific remedy, and towards a better understanding of the capabilities of the organism for resisting the disease.

If to-day our methods are more satisfactory, it is due to the workers who have insisted upon the *vis medicatrix naturae*, who have recognized the capacity of the body to deal with disease, who have striven to strengthen that resistance by the well-established support of fresh air, sunlight, an improved hygiene, and increased nutriment, or super-alimentation, as the scientific men prefer to call it. To this must be added the employment of drugs as an adjuvant to these remedial measures.

Amongst the remedies which have for a long time obtained some favour in the treatment of tuberculosis is iodine. Indeed, it is probable that the high place deservedly attained by cod-liver oil is due to the action of this and similar substances. I propose in this paper to relate the experience which I have had with this element, employed in rather an unusual way, and I may say at once, that the results have been extremely gratifying.

The method which I have employed is the injection of a solution in which iodine is held in suspension. The preparation is made according to the following formula: precipitated iodoform which con-

tains 96.7 per cent. of iodine, 100 grains; acacia powder, 25 grains; glycerine, 200 minims; carbolic acid, 5 minims; boiled distilled water, 300 minims.

I have employed this method for twelve years, and was induced to make trial of it after reading Krause's monograph upon iodoform in the treatment of tubercular joints. The use of iodoform in tuberculosis of the joints is a well established procedure. So recently as March 10th, 1906, we find an inquiry in the *British Medical Journal*. H. E. L. asks if the injection of iodoform in glycerine into a tubercular knee-joint is sufficiently often beneficial and free from risk to be undertaken. To this the editors reply:

"We have referred this question to Mr. A. H. Tubby, who writes: 'In early cases of tuberculous synovitis in which fair movement is present, and with no backward dislocation, and when the thickening of the synovial membrane does not yield to rest and the application of mercurial ointments, the aseptic injection of sterilized iodoform and glycerine is free from risk and beneficial. About 1 drachm of the emulsion should be injected into various parts of the joint at intervals of three weeks, and the parts kept at rest for three months afterwards.'"

What I will endeavour to show is that this method is efficacious not only in affections of the joints, but in other tubercular conditions as well; that, in addition to the local effect, it has also a constitutional action.

The injection is done under the usual directions for securing anti-sepsis. The vessels holding the emulsion are sterilized by heat, and a syringe with a metal piston is employed, that it, too, may be made surgically clean. The site which I have chosen is the space between the left acromion process and the capsule of the shoulder-joint. The pain of the operation is not long-continued; absorption is slow, and the chance of acute poisoning is small. If the pain be severe, a little morphine may be employed. A rather fine needle is used so that the solution will not ooze out after the point is withdrawn.

After disinfection of the skin over the shoulder joint, a point corresponding to the tubercle on the posterior part of the acromion process is located, and the skin just below it is frozen with ethyl chloride. The needle is inserted close to the bone about half an inch, and the solution slowly injected. It is better to dress the site of the injection with sterilized gauze and a bandage, and then fix the arm to the body with a bandage for two days.

At first as high as forty-eight grains of the solution were given.

This was in a case of tuberculosis of the larynx, which was so swollen that I could not see the trachea. The effect was quite marked, and the swelling entirely disappeared. Although this dose had a favourable action it was found to be too large and depressing. The amount for non-pulmonary cases is 12 to 24 grains, and in pulmonary from 8 to 12 grains, according to the amount of disease, and the condition of the patient. If there is much disease and depression, it is better to use smaller doses and repeat it more frequently. I now use twelve grains every two weeks, but if the patient is eating well, and expectoration diminishing, one can wait whilst the system is being built up. Where the drug has been used for a long time, anæmia is apt to occur, especially if the dose is large, and it is prudent to use a preparation of iron between injections.

There are certain accessories to the injection, which it is wise to employ. After the first day acid phosp. dil. m x and strychn. phosp. gr. 1-30 may be used until the end of the reaction. If the stomach will tolerate it Easton's formula may be employed; also, iodine, gr. $\frac{1}{2}$, potass. iodid. gr. $\frac{1}{4}$, sp. vini rect. mxv every four hours, in half a tumbler of water, between meals.

I was induced to undertake these experiments in December, 1894, when a patient consulted me, who was suffering from tuberculosis of the astragalus and other parts about the ankle-joint. The patient declined to be operated on, and I suggested treatment by iodoform. I gave four injections during a year, and at the end of that time the recovery was so complete that the patient had a useful joint. In February, 1895, a similar case presented itself. The treatment was the same, and an equally good result was obtained. From these cases I gained the idea that there must be a constitutional as well as local reaction, the results were so marked.

In November, 1895, I began the subcutaneous injections of iodoform; but, as this was very painful, and apparently without result, I gave it up. The next case in which I had a chance to see its action was one of tubercular wrist joint with discharging sinus. I scraped away the fungoid granulations, and then injected the joint with iodoform, and retained it by plugging the opening of the sinus with iodoform gauze, and then covering it with Mead's plaster. The first injection was given November 8th, 1895, and by December 26th, 1895, the sinus had closed and the joint was well.

A case of tuberculosis of the hip-joint, with three sinuses and disease of the left apex, next presented itself. One sinus was utilized for injection, and the whole three were plugged as before, and covered with Mead's plaster. In a short time the disease of the lung

subsided, and the joint trouble slowly got well. After this case I was convinced of the constitutional action of iodoform.

Miss McK. came under treatment in July, 1903. It was a case of tubercular disease of tarsus and ankle-joint. Injections were given until July, 1904; by which time her joint had recovered. It was during this case that I noticed the effect of this drug on the tubercular disease in the relief of pain and also its effect on metabolism. The patient has remained in good health up to the present time.

Mrs. R. came to the Montreal Dispensary in June, 1904. She had had tuberculosis for nine years. She was expectorating about eight ounces of purulent fluid in the twenty-four hours, was much emaciated, and coughed night and day. It was a case of chronic fibro-caseous tuberculosis. The pulse was 96, the temperature 100. The idea occurred to me to inject the iodoform into a joint; for if it did no harm to a diseased joint, it could not affect a healthy one. She was injected June 30th in the left knee-joint with forty-eight grains of iodoform. The effect on the tubercular disease of the lung was marked. The cough was eased, expectoration diminished, and by June, 1905, she had stopped coughing. The case will be referred to later.

The next case, Mrs. L., came to the Montreal Dispensary in September, 1904, with tubercular disease of the left shoulder-joint, and the skin below it. It was during this case that I found out the method that I am using at the present time, and also, was able to observe the action of iodoform on the tubercular disease of the skin.

Before proceeding to the recital of cases I shall refer to certain observations which I have made upon the effect of iodine given in the form of iodoform hypodermically upon metabolism and upon diseased tissue.

Action of Iodoform on the Tubercle.

There is a rise of temperature in the first twelve hours, and by twenty-four hours one notices a yellow spot in the centre of the tubercle, and almost complete depletion of the inflammatory products in the skin around the tubercle. The skin becomes soft and pliable. By the end of four days the yellow spot becomes a crust, is absorbed or falls out and leaves a small ulcer, which soon heals over and eventually bleaches out as scar tissue.

When there is an open sore, as in the case of Mrs. L., where there were three tubercular ulcers, about the same size, two of which were gouged out, with unhealthy bases, and the other with a membrane around its edges, the changes during the first twenty-four hours were marked. The skin round the ulcers showed almost complete depletion

of all the inflammatory products, and became soft and pliable. The base of the ulcers was dry, and had almost come up to a level with the skin. The ulcers had lost their crater-like appearance. During the following four or five days there was a discharge from them. The granulations became healthier, the ulcers got smaller, and the two without membrane closed by the end of the fourteenth day. The membrane remained on the latter until it was almost closed. During the early stage of healing there were a great many fine blood vessels piercing the membrane. The base of the ulcer went through the same process of healing, only the course was slower. The membrane remained on for fourteen days, and by the twenty-first day the ulcer was completely healed. When the ulcer does not heal by the twenty-first day, it apparently gets just as bad as ever if not followed by another injection.

Action on the Blood.

There is a leukocytosis. The increase corresponds to the dose of the iodoform injected, and the severity of the reaction. I have plotted out a chart showing the rise of leukocytes with the rise of temperature. There is not much change from normal in the ratio of the different kind of leukocytes. The counts have shown about 80 per cent. polynuclear, and 20 per cent. mononuclear. The hæmoglobin is not changed, but is diminished if the dose is large and continued for a long time. The red blood cells remain the same.

Action on the Urine.

In tubercular subjects, especially of the lungs, the urine is always scant. Below I have a chart for eight days during the reaction.

	Day before injection	Injection.	3rd day	4th day	5th day	6th day	7th day	8th day
Amt. of urine in cc.	600	850	650	890	900	600	525	720
Specific gravity....	1025	1024	1025	1025	1023	1024	1032	1027
Amount of solids in grammes	58·25	55·92	58·92	58·92	53·59	55·92	74·56	62·91
No. of grammes in 1 cc. of urine ...	023	022	019	020	021	021	025	018
Amount of urea in 24 hours	13·18	18·70	12·35	17·40	18·90	18·00	13·12	12·96

Action on Metabolism.

About the second week after the injection the appetite becomes increased. As time goes on the general vigour is increased and the effect of the injection may last for months, the patient putting on flesh and getting quite strong, although the disease is not completely eradicated.

Action on the Circulation.

The pulse becomes slower and stronger. There is a fall in blood pressure. The greater the dose the greater the fall, and the longer it takes to return to its previous condition.

Action on Temperature.

In pulmonary cases there is a rise in temperature according to the dose, which lasts from four to seven days, and subsides leaving a normal or reduced temperature. In other forms of tuberculosis, the rise of temperature does not last so long.

Cases that have been Treated.

Joint Tuberculosis—Case I.—Mrs. R. Family history of tuberculosis; complained of pain in the right hip-joint for five years. One year ago an abscess formed on the outside of the right leg; and opened about two inches below the great trochanter. After treatment it healed; but on July 1st, 1905, the swelling reformed in the same place, and was accompanied with pain, lameness, fixation of the joint, fever. Sinus was injected with 10 per cent. iodoform solution, and plugged with iodoform gauze, and then covered with Mead's plaster. The cavity was injected every fourth day up to August 10th, and at longer intervals up to August 26th. By August 31st the sinus closed. There was no pain or lameness and the patient was able to use her joint. She was put on syr. ferri phosp. co., and a solution of iodine. After three months the joint had recovered.

Case II.—James L., aged 6 years, complained of disease of the right hip-joint for the last six months, great pain day and night and swelling of the joint. There was a difference of one inch in length of the legs, and evidence of deep fluctuation, and fixation of the joint. He was treated by extension, and tonics in the hospital, but, as he was steadily growing worse, he was removed to his home, and came under the present treatment. He was injected August 3rd, 1904, forty-eight grains of iodoform being given. There was a severe reaction

followed by complete relief from pain, and the swelling in the joint went down. He did very well until he developed pleurisy September 18th, 1904. The pleurisy persisted, and patient began to run down, and have sweats. The pain and swelling returned in his joint. On October 18th he was injected. There was a great change for the better. The fluid rapidly disappeared. The pain left the leg and the swelling diminished. By November 10th the chest was free. November 15th, injected again, and on examination the joint was freely moveable and very little swelling. On January 14th he received another injection, and was so well after it that the extension weight was removed. There was no pain or swelling. On January 24th patient had an attack of dysentery. The dysentery was so severe that it practically caused his death. It lowered his resistance, and he died of general tuberculosis. It seems that there is a susceptibility to colitis after a number of injections, especially if the dose is large.

Another case reported in the earlier part of this paper, Mrs. R., died in the same way after she had practically stopped coughing. In all cases it would be advisable that the abdomen be well protected. I think I might have saved the above case; if I had given a small injection after the acute symptoms had passed off. This was well seen in a case of phthisis, which was injected by the knee method. The knee remained swollen; but after an injection in the shoulder, the swelling disappeared during the first twenty-four hours showing the action of iodoform on inflammatory tissue. Since the above case I have been successful in treating a similar one by using a small injection.

Tubercular Glands.

Case III.—Miss E. D., aged 10 years, complained of enlargement of cervical glands on both sides. The adenitis, began November, 1903, and continued to increase up to the time of treatment. Patient had one sister who died after operation on tubercular glands. On May 16th, 1905, patient was injected in the usual way, with twenty-four grains. There was a very marked improvement. The majority of the glands disappeared within the first week. There was the usual febrile reaction. During that time patient was kept in bed on light diet. When temperature was normal, she was allowed up, and given full diet. As there were still some glands enlarged on both sides, she was injected July 9th, 1905, with still further diminuation. After the glands got down to a very small size they were slow to disappear, so she was injected August 12th and September 26th. After the last injection the glands had returned to their normal size. Examined

October 28th, patient was in good health and both sides of the neck were normal in appearance.

Tuberculosis of the Skin.

Miss J. M., aged 34 years, came to the Montreal Dispensary, May 23rd, 1905, and was referred to me by Dr. J. M. Jack, to whom I am indebted for having so patiently followed this case as well as several others.

Patient had an eruption on her nose and face, which began nine years ago. During that time she had a varied treatment, including the Finsen light, and X-rays for four months without benefit. The skin lesion was on the right temple, both cheeks and nose. There was some loss of tissue of the left nostril and some scarring on the right cheek. The skin was raised, indurated, and here and there a yellow spot appeared on which a crust had formed. She received her first injection of twenty-four grains on May 29th, 1905. By June 1st a change in the diseased area had taken place. The skin had become soft and pliable. There were numerous small yellow spots. These were tubercles which, upon microscopic examination, showed that they had undergone fatty degeneration in the centre. By June 5th the redness in the skin and induration were much less, and the yellow spots were beginning to dry up, and by June 11th were all absorbed. In some places the tissue began to whiten out. Before the second injection, June 12th, one or two tubercles underwent resolution, but after it a great many more were acted on. The area of diseased tissue steadily decreased. After the third injection only a few tubercles were acted on. She was injected July 31st, October 30th, and November 27th. Following each treatment the induration steadily diminished, and a few tubercles underwent resolution. As the tubercles disappeared the skin became paler and finally white scar tissue remained. At present time, February 16th, 1906, the disease is practically eradicated.

Case V.—Mr. C., came to the Montreal Dispensary and was referred to me for treatment by Dr. J. M. Jack. He complained of cough, loss of flesh and expectoration of purulent character, and numerous small ulcers on the right shoulder joint, which had been increasing in area during the last five years. There was no history of lues. Consolidation in right apex of lung. Skin on the right shoulder was raised, indurated, and here and there were numerous small ulcers, one as large as a fifty-cent piece. These ulcers had a crater-like appearance with overhanging edges and unhealthy base. Some of them

were covered with white membrane. He was injected September 19th. By Saturday, September 23rd, sores were all healing and were undergoing changes already described. By September 27th ulcers were all healed. There were a few tubercles left on the top of the shoulder. He was unable to take second injection. He returned January 4th, 1906, and reported that his cough had left him and that he had gained five pounds. The skin of the arm had broken down where the tubercles were left after first injection, also, a spot on the back of the neck. He was injected, and when seen January 10th the ulcers had healed again, and the skin had become soft and pliable. In a spot on the back of the neck the tubercles were seen to have undergone the usual change. He was injected January 26th, and at present, February 10th, 1906, skin lesion is healed.

Case VI.—Ernest L. came to the Montreal Dispensary, April 28th, 1905, complaining of a skin disease of several years duration, cough, purulent expectoration, and emaciation. There were three ulcers, one on arm, one on forearm, and one on back of right hand, near ulnar side. They were typical tubercular ulcers. For the last seven years there has been a certain amount of healing and then breaking down.

On examination of lungs dulness in right supraclavicular and infraclavicular regions was found, broncho-vesicular breathing, and sub-mucous rales. Sputum contained tubercle bacilli.

April 29th injected with iodoform gr. xxiv. There was a marked change in the ulcers. All three took on a healthy action. He was injected May 18th, and June 28th, 1905. After the last injection the sore on upper arm and forearm had healed completely. The one on the back of the hand was practically healed, only a few tubercles being left. The cough had almost ceased and patient's general health was very much better. He did not appear for treatment again.

Tuberculosis of the Lungs.

Case VII.—Mrs. K., aged 30, came to the Montreal Dispensary, March, 1905, complaining of cough, difficulty in deglutition, a hoarseness and rapid loss of flesh.

Family History.—Two sisters have died of consumption. Present illness began three years ago, December, 1902, with slight cough followed by a hæmorrhage from the lungs. During the winter patient had a hoarseness, cough and expectoration, but when the summer came the hoarseness cleared up. The cough continued up to October, 1904, when patient caught a severe cold. Cough got worse, and hoarseness returned. The patient at this time was pregnant, and was confined

January 30th, 1905. During the latter months of pregnancy the cough and hoarseness increased and, owing to painful deglutition, emaciation was rapid.

Her weight in good health was 170 lbs. and at the time of her injection was 112 lbs. Larynx was injected, mucous membrane swollen, especially over arytenoid cartilages, also granulomata on both vocal cords. Thick tenacious sputa was on the trachea and on ary-epiglottidian fold.

Lungs—Dulness in left supra- and infra-clavicular regions extending down to the third rib, prolonged expiration, broncho-vesicular breathing and numerous subcrepitant rales. *Back*—Dulness in spura- and infra-clavicular regions, broncho-vesicular breathing, and numerous rales, subcrepitant rales, temperature was 100; pulse, 96.

Dr. Williams reported tubercle bacilli in the sputa.

On March 25th, 1905, first injection was given, amount 24 grains. Examined April 1st, temperature was 99. Larynx showed signs of improvement, swelling of the mucous membrane diminished, granulomata were smaller, hoarseness less and no pain. During the first twenty-four hours after an injection the expectoration became less, the breathing softer, all pain disappeared and cough was easy and less frequent. On the second day the rales returned, expectoration was increased, and continued up to the fifth day, when it again diminished. The patient began to eat well and felt stronger. She was injected April 26th, June 6th, June 20th, July 4th, August 11th, October 17th, November 6th, December 2nd, and January 23rd, 1906. In the last three injections she received only twelve grains. There has been a steady diminution of the sputa and cough. At the present time she only coughs a few times in the morning. There is not much to be made out on examination of the lungs, only slight roughening of breathing, larynx slight redness. Her weight has increased from 112 lbs. to 125 lbs. Her appetite is good. She sleeps well, and has done her own work for some time. She has taken, latterly, iodine gr. $\frac{1}{2}$, every four hours, between injections, also, Easton's formula, and an inhalation of tinct. iodine, acidi carbolici in sp. vin rect and ether,

Case VIII.—A. H., aged 28 years, came under treatment June 8th, 1905. At that time he complained of being run down, hoarseness, cough in the morning, and through the day for the last year, expectoration of a greenish character, losing flesh. Weight in good health 170 lbs, now 150 lbs. Cough and hoarseness much worse during last two weeks. Mother and one brother, also uncles on father's and

mother's side, all died of phthisis. In sputum numerous tubercle bacilli were found.

Lungs—Softening in the left apex. *Larynx*—Granuloma obliterating the left vocal cord, and swelling of the mucous membrane, especially over the arytenoid cartilages.

He was injected with 24 grains, and was sent to the country after two days rest, but returned June 30th, for another injection. He has been injected July 28th, August 13th, September 13th, September 28th and October 13th. About two weeks after the last injection he had an attack of acute dysenteric colitis. He was treated with injections of pot. permang. gr. $\frac{1}{8}$ to the ounce, using about a quart of the solution, also, took bismuth subgallate gr. x, every four hours. The attack was very severe, and pulled the patient down. It did not stop until after injection December 1st, 1905. Injections were given him December 1st, December 15th, 1905; January 6th and February 3rd, 1906. During these months, notwithstanding the dysentery, the granuloma slowly disappeared, and at the present time the left vocal cord has almost bleached out. The lungs are practically normal, only roughening of breathing.

About December 1st, 1905, Dr. Birkett kindly consented to examine the patient's larynx and to follow the treatment. The larynx was examined Thursday, February 15th, and found to be almost healed.

Case IX.—Miss M. N., age 23, came for treatment July 1st, 1905. She complained of headache, emaciation, cough day and night, followed by expectoration of a purulent character. Family history—One sister died of consumption. Present illness began three years ago, with slight cough in the morning. One month and a half ago she began to cough day and night, loose flesh and expectorate about two ounces of purulent sputa in twenty-four hours.

Lungs.—Dulness in supra—and infraclavicular regions, broncho-vesicular breathing and numerous rales. Behind—dulness in supra—and infraclavicular regions, broncho-vesicular breathing and subcrepitant rales. Pulse was 84, temperature 100.

Patient went to St. Agathe for a month, and on her return her cough was more troublesome, expectoration profuse and marked increase in the physical signs, weight 90 lbs.

She was injected September 19th with 24 grains, followed by marked improvement, especially great relief to her cough, which was only in the morning. She was put on iodine gr. one quarter and Easton's syrup. She has been injected twice since. Expectoration has ceased and her

weight is increasing. *Lungs*—no dulness or rales, only slight roughening of the breathing.

Case X.—J. H., age 22, came under treatment August 14th 1904. He had been coughing and expectorating for seven years. At time of examination cough was troublesome, and expectoration was profuse and purulent. There was marked emaciation, and a chronic purulent notitis media.

Lungs.—Softening in the left apex. Patient was put on iodine gr. one half three times a day and cod-liver oil and sent home to the country. At home he had an attack of pleurisy, which seemed to get worse steadily, so he returned to the city.

Lungs.—Marked softening in the left apex. Fluid in the left base, and an asthmatic bronchitis. Heart enlarged. Pulse 84, temperature 98. Finger nails were blue. He was emaciated, and suffered much from dyspnoea. Patient was injected with 24 grains, and sent home. His cough improved and he slowly gained in weight. Since that time he has only received 8 grains, as after twenty-four grains it took too long to pick up, owing to the fall in blood pressure and a weak heart. The disease has slowly yielded. The last injection was given January 3rd 1906. After it the patient picked up and had a good appetite. The condition in the lung improved. Dulness has disappeared from the apex, and there were only a few rales in the base. He was put on iodine gr. one half, every four hours and Easton's syrup and went back to the country. Latest report is that his ear has stopped running, and that he was able to eat well, and had only very little cough.

Case XI.—Mrs. C., age 24, came to the Montreal Dispensary September, 23rd, 1904. She complained of emaciation and cough, followed by purulent expectoration, and hæmorrhage from the lungs. The weight was 144 lbs. About six months ago she began to cough, and expectorate. Two months ago she had a hæmorrhage from the lungs, which lasted for one week. Since that time cough and expectoration have increased. Sputum contained tubercle bacilli. Patient had two sisters who died of consumption, and one has been treated by this method.

Lungs—softening of the left apex. She was put on iodine gr. one-half every four hours and Easton's syrup. Cough stopped October 11th, 1905. Examined January 9th, 1906, in good health and lungs are perfectly normal. Weight 144 lbs. There was no injection in this case, and the results I attribute in part to the iodine.

Case XII.—Mr. M., age 20, came under treatment January 1st, 1906. He complained of cough, followed by expectoration, emaciation

and hæmorrhage. Last August, 1905, had a slight hæmorrhage from the lungs; since that time has been coughing and expectorating. On January 1st, 1906, had a severe hæmorrhage from the lungs. Temperature was 102; pulse, 108.

Lungs—Softening in the left apex. Injected with 12 grains January 6th, 1906. Cough almost ceased; appetite was good. He was put on iodine gr. one half every four hours and Easton's formula. Examined February 8th, coughs a few times in the morning. *Lungs*—only slight roughening of the breathing in the supraclavicular region.

Three cavity cases have been treated by this method. They all died—two of septic pneumonia and the other of heart failure. These cases were all septic. Both the streptococcus and tubercle bacilli were found in the sputa. The second case, Mr. S., was treated with antistreptococcic serum with reduction of temperature at the end.

Case XIII.—The last case, Mrs. B., age 25, came under treatment August 4th 1905, with active disease, a cavity in right apex, and one in left upper lobe about the third rib. Temperature running up to 103, and pulse 96 to 108. Tubercular diarrhœa. She received several injections and always with benefit, but as there was streptococcic infection the disease progressed. After treatment for a time with iodoform, streptococci serum was used, and by November 1st, 1905, her temperature became normal and her diarrhoea stopped. It was noticed toward the last that a combination treatment gave the best results. In treating the above cases the dose of iodoform was too large, and too far apart, and the patients were not kept at rest.

I have two cavity cases at present under treatment. They are receiving small injections often, from seven to twelve days, and iodine gr. one half every four hours after the reaction is over. They are slowly progressing.

The feeding and the care of the patient are carried out after latest methods, by fresh eggs, fats and fresh air.

Tuberculosis of the Bowels.

Case XIV.—Mr. B., came under treatment November 1st, 1905, with cough, purulent expectoration, fever and diarrhoea. Patient had a tubercular diarrhœa for two years.

Lungs—Cavity in right apex. Patient was very weak and having between five and seven stools a day.

He has been injected with 8 grains every twelve days, and iodine gr. one half every four hours after the reaction is over. His diarrhœa

has steadily diminished, also fever and expectoration. By December 1st, 1905, he was only having one stool a day, which has continued up to the present time. He is now on full diet and is gaining in weight. He has been kept at perfect rest in bed.

If in advanced cavity cases, after an injection, there is a steady improvement, it is better to wait until the patient's condition is stationary before giving another injection. The improvement of the general health is most important.

OSTEOMYELITIS — WITH ESPECIAL REFERENCE TO ITS TREATMENT.

BY

A. E. GARROW, M.D.

No plea, I think, is necessary for bringing the subject of Osteomyelitis before the members of this Society. It is a disease which merits the careful attention of the general practitioner, who, as a rule, has the first opportunity of studying the case, and may experience considerable difficulty in arriving at a correct diagnosis, while the surgeon's resources may be tried to the full in bringing the treatment to a successful issue.

In discussing the symptomatology and pathology, I shall practically limit myself to infective osteomyelitis; whereas, in the treatment, reference will be made to the healing of cavities in bone, arising from other causes than suppuration.

The term "osteomyelitis" is not limited to inflammation of the marrow of long bones, in which it sooner or later extends into the osseous lamellæ surrounding it, but is also applicable to a similar process beginning in the cancellous tissue of irregular bones, such as the os calcis, and in the diploic tissue lying between the tables of the skull bones.

Infective osteomyelitis may be defined as an acute, suppurative inflammation beginning in the bone marrow, and due to pyogenic microorganisms. This disease is especially common in childhood and adolescence, becoming less and less so as the bones reach full development. Multiple infective osteomyelitis may develop at an advanced age, as recorded by Bottomley. It is much more common in boys than in girls; slight contusions, strain of the ligaments and tendons

inserted at or near the epiphyseal line, exposure to cold and wet, are undoubtedly predisposing factors.

The rôle played in infectious diseases and the exanthemata is at present a subject of pathological discussion. With some, measles, scarlet fever, and small-pox are looked upon as predisposing factors, lowering the general resistance, and thus allowing streptococci and staphylococci circulating in the blood, to gain a foothold in the bone. Areas of necrosis are frequently present in the bone-marrow, a suitable nidus for bacterial growth, both in small-pox and in typhoid fever. In typhoid fever, as well as pneumonia, there is indubitable bacteriological evidence to show that these organisms are not only pathogenic, but also pyogenic.

Fränkel, in his extensive studies on the changes in the bone-marrow in acute infectious diseases, has made clear to us what had been the source of much speculation,—the origin of infection in obscure cases of suppurative osteomyelitis. This investigator has shown that distinct inflammatory changes are present in the bone-marrow in infectious disease, and are due to the same infective agent that produced the general disease, and also that this localization of bacteria does not always produce sufficient reaction in the bone-marrow to be recognized clinically, even when the patient recovers; nevertheless such focal collections, although they may remain quiescent for long periods of time, become active pathologically when the tissue harbouring them has been irritated or been subjected to trauma. Undoubtedly, in the majority of cases, bacteria so deposited in the bone-marrow are destroyed.

Keen, in 1898, pointed out the development of osteomyelitis "at very long periods after the original attack of typhoid fever," in which pure cultures of the typhoid bacillus were obtained from the pus, and refers to such a case reported by Buschke, where seven years had elapsed before the development of the bone disease. The author expressed himself at that time as follows: "Instances showing the accumulation of the bacilli in the bones and their persistence for months and even years after the fever, explain the otherwise curious fact that the cases of periostitis, osteomyelitis and abscesses in bones occur at such long periods after the fever, and so much later than most of the other surgical complications and sequels of typhoid. Why in some cases . . . though the bacilli are present, they do not produce any of these disorders of the bone, we do not know. Probably it is due to the fact that the general health is such that their deleterious tendency and influences are successfully vanquished."

Bloodgood, in a recent *resumé* of the literature on this subject, draws

attention to the analogy between such bone inflammations and gall-bladder infections with stone formation, following pneumonia, typhoid fever, and influenza, and points out that, in the majority of cases, the primary invasion of the gall-bladder is not associated with clinical symptoms, and that recent observations suggest that infection of the lymphoid tissue in the appendix during infectious diseases may be the first etiological factor in appendicitis.

In the light of such knowledge, there is no specific virus causing osteomyelitis, since it may arise from a variety of organisms.

The *straphylococcus pyogenes aureus* is the organism most frequently present, and produces the most typical and extensive forms of bony destruction. The original focus may be a furuncle or a carbuncle.

Rarely the *streptococcus* is the causative agent, and when present it seems to show a predilection for the joints and periosteum, producing both joint and epiphyseal inflammation, frequently with a separation of the latter. This form of infection is prone to occur in young children, secondary to a phlegmon or erysipelas.

The *pneumococcus*, like the *streptococcus*, attacks the joint or superficial bone.

The typhoid bacillus, in pure culture, causes less extensive lesions than when a mixed infection is present.

When open sinuses exist a variety of bacteria may be present, and mixed infection is the rule. The colon bacillus, the bacillus *pyocyaneus* and the bacillus *fetidus*, have been isolated from old cavities.

Rare anærobie bacilli, in pure cultures, may be the sole cause of infection.

Lexer has shown that the circulation in the long bones is supplied by three different sets of vessels which do not anastomose with one another.

The single nutrient artery, which in the femur is double, with a small communicating branch, bifurcates when it enters the shaft, and pursues its course upwards and downwards, ending at or near the epiphyses as fine terminal branches.

A varying number of small, short trunks, which enter the shaft near the epiphysis, perforate occasionally the cartilage and end as terminal arteries in the epiphysis.

The epiphyseal vessels, which enter the epiphysis from all sides, run towards the bone nucleus. Some of these turn and extend towards the joint cartilage, while others run towards the epiphyseal line.

It will thus be seen that the epiphysis derives its blood from all the branches.

Further, the same author has shown that this distribution can be demonstrated up to the period of complete bony development, when it is noted that the vessels of the shaft become relatively smaller than those entering the extremities; while the joint vessels become distinctly enlarged. He believes that these changes account for the relative frequency of epiphyseal infection in children and of joint infection in adults. He also believes that the situation of inflammatory foci in the bone is dependent entirely on the size of the embolus. When large it becomes arrested near the entrance of the nutrient artery, while the finer emboli are able to proceed to the terminal branches near the epiphysis.

This relation of infective localization to particular arterial branches, has been demonstrated both experimentally and clinically; for instance, in the head of the femur the primary focus of tuberculous disease is situated at the insertion of the ligamentum teres, or at a point just above or just below; and these three places correspond accurately to the entrance of epiphyseal arteries, as shown by Lexer's method of injecting the arteries of the bone.

Tuberculous and infective osteomyelitis are comparatively common in the shaft of short pipe bones, such as the phalanges; whereas it is relatively rare in the long bones. Lexer explains this apparent inconsistency by demonstrating that the diaphyseal arteries in such short bones are distinctly larger than the epiphyseal vessels; whereas in the long bones the opposite condition obtains. Whether the alterations in the relative size of the blood-vessels at the period of complete bony development is the cause or not, clinical experience teaches us that primary osteomyelitis is rare after that period, the majority of cases occurring in adult life being recurrent attacks.

When an infective process originates at or near the epiphyseal end of the shaft, its usual situation, it spreads rapidly along the marrow, producing areas of necrosis and cellular infiltrations, which rapidly degenerate into pus. The blood supply within the unyielding bone is quickly arrested and the endosteal layer of compact bone ceases to be nourished. Through the intercommunicating bone-cells and Haversian system the infective agent may reach the inner surface of the periosteum, which soon becomes separated from the cortical surface, cutting off the blood supply to the outer layer of the shaft. According to the virulence of the infection, the resisting power of the patient, as well as the stage of bone development, the results will vary.

may be a central bone abscess, with slight or extensive central necrosis; or the whole shaft, for a variable extent, may undergo complete destruction. Should the patient survive, an abscess will develop in the soft tissue, which may rupture and continue to discharge pus and sequestra for years.

So soon as drainage is established, either naturally or by surgical interference, reparative processes begin, both in the endosteal and the periosteal tissue. The osteogenetic layer of periosteum rapidly proliferates and produces a new layer of bone, which may take the form of long splints or ensheathing tubes, corresponding to the extent of cortical destruction.

If the peptonizing action of bacterial and inflammatory products were capable of rapidly dissolving or breaking up and separating the dead bone, as it does the slough in similar infections in the soft tissues, the rapid proliferation of the endosteal and periosteal tissues, with its subsequent transformation into osteoid and fully developed bone, would soon repair the injury inflicted and restore the bone to an almost normal condition. The presence of the sequestrum, separating these actively proliferating tissues, prevents their union at a time when repair could be made perfect. Even in total necrosis, when the sequestrum is removed early, the periosteum alone is able to produce an almost perfect anatomical shaft.

But, under ordinary circumstances, when nature has finally disposed of the dead product, or it has been tardily removed by the surgeon, the activity of the regenerating tissues is arrested by its more or less complete transformation into bone, and the resulting cavity in it is lined with a layer of granulation tissue, which possesses but little of its original regenerative activity; besides becoming the home of numerous pyogenic organisms, which, from time to time, acquire increased virulency and light up fresh inflammation, leading to further destruction of bone, or else by acting as an irritant lead to sclerosis of the newly formed involucrum.

Infective osteomyelitis, as a rule, begins with sudden local pain, throbbing in character and increasing gradually in severity. The situation is usually near the end of one of the long bones. The pain is increased on pressure or jarring the limb. Swelling of the soft parts soon follow. The surface becomes reddened and pits on pressure. The contiguous joint becomes swollen, contains increased fluid, though cultures secured by aspiration of the joint remain sterile. Later, in the course of the disease, suppurative arthritis may supervene. The constitutional disturbance is prompt and indicative of

infection, and is in direct proportion to the virulence and extent of bone involved. There is usually marked leucocytosis.

With such a symptom-complex one would not expect much difficulty in making a diagnosis; but, owing to marked variations in the onset, course and severity of the local and constitutional symptoms, mistakes are frequently made. For instance, the pain may be slight, or even absent, or at least not complained of in a dull or delirious patient. The first evidence of local trouble that may be recognized in children is a swollen joint, making it impossible to differentiate an arthritis from an infective osteomyelitis. A patient may even die of acute multiple osteomyelitis without any local signs of its presence, and a post-mortem fail to show the cause of death, unless the bones are examined. The diseases which are usually mistaken for osteomyelitis are typhoid fever, articular rheumatism and gonorrhœal or acute-tubercular arthritis. In rheumatism and the various forms of synovitis the pain is primarily in the joint and more than one may be involved. Bone tenderness follows the joint infection.

A Widal reaction and the absence of leucocytosis would suggest typhoid fever.

As a rule, surgeons have treated acute infection of the marrow by making a free incision down to the bone, trephining through the shell, enlarging this opening upward and downwards, by means of chisel and gouge, as far as may be required, curetting away all infected material from within the shaft, and draining. If the area was small, such treatment was often successful; if very extensive, a cavity was left, which frequently failed to fill up, and gave rise to a persistent sinus. In cases with extensive necrosis the rule was to wait until the sequestrum had separated from the living bone. In the meantime, a rigid involucrum formed, and when sequestrotomy was performed, a large cavity was left, which persisted often for life, and in many cases the limb was sacrificed.

Surgeons have employed various methods to assist nature in closing the cavity. As a rule aseptic organic substances have been used to act as a framework for connective tissue growth, hoping that osteoid, and later, fully developed bone would replace it, in the process of repair. In many cases these methods have proved successful. Schede's blood-clot, Neuber's approximated skin-flap, Hamilton's sponge grafts, Senn's decalcified bone chips, iodoform and wax or paraffin preparations have all been used with success. Even attempts have been made to fill the cavities with a variety of foreign substances, such as glass, ivory,

celluloid, gold foil, etc.; but satisfactory results were obtained only in exceptional cases.

In certain situations osteoplastic bone-flaps have proved of service in obliterating these cavities.

Nichols, of Boston, has probably made the most important contribution to our knowledge of the treatment of osteomyelitis in its various stages, within recent years, by drawing our attention to the importance of saving the endosteal tissue in the acute stages, while providing for drainage, and of early artificial separation of the sequestrum, or rather, necrosed bone in the subacute cases.

In the acute stage he advises early opening of the bone with a trephine, enlarging this upwards and downwards as far as evidence of bone infection can be demonstrated; but on no account to curette; simply drain and wait. If sufficient endosteal tissue is thus preserved, rapid repair and filling up of the cavity may take place. If not, and central necrosis has occurred, the treatment necessary for the chronic stage is to be employed.

In the subacute stage he advises removing the dead and dying bone at a time when the actively proliferating periosteum is about 1-16 of an inch in thickness. This may be recognized by passing a needle through it, noting when the crackling sensation, due to the passage of the needle through the osteoid tissue, is first felt, and then when it is arrested by coming in contact with the dead bone; or else, remove a small portion of the periosteum at the edge of one of the openings, and estimate its thickness by the microscope. The periosteum has usually acquired this thickness in about eight weeks from the time drainage was established, and though somewhat stiff, is pliable and capable of retaining the shape into which it may be folded.

When the disease has involved one of two parallel bones, he chooses this time to perform sequestrotomy. The periosteum is carefully stripped from the bone, throughout its diseased area, the latter cut through both above and below, taking care that the section is in healthy bone. In cases of necrosis involving the whole shaft, the separation takes place at the epiphyseal line. The interior of the periosteal shell is sponged, infected looking areas may require curetting, and, after thorough sponging, is swabbed with carbolic acid and alcohol, or other antiseptics, bleeding carefully arrested, and is then folded ribbonwise, sutured at the edges along its entire extent, the overlying soft tissues closed, and drainage provided from the interior of the periosteum in several places; but particularly at the lower end.¹

¹ Note method of making conical section to avoid dead spaces.

To prevent the formation of a "dead space," Nichols advises cutting the upper end of the bone wedge-shaped—with the apex pointing downwards.

This method has been successful in many cases in securing an almost perfect anatomical shaft; the limb being capable of performing its function perfectly.

In 1897 I removed the entire shaft of the tibia, in a young lad (specimen shown), by the method just described. Healing took place rapidly, and when last seen, there was little to indicate, on examination, that he was the possessor of a second tibia in that limb.

In cases where there is but one bone, as in the humerus, the danger of deformity from muscular contraction must be thought of, before removing the supporting and rigid sequestrum. If allowed to remain too long, the periosteal tube becomes rigid and dense and has very little or no power of repair centrally. Here he advises waiting for about 16 weeks. An incision is made down to the periosteal shell, which is sufficiently opened up to enable the surgeon to extract the necrotic bone. This latter procedure may be comparatively simple or very difficult, according to the extent of necrosis. He endeavours to injure the periosteal tube as little as possible, crushing the necrosed bone, if necessary, to facilitate its removal. The resulting cavity is disinfected, the skin incision closed, drainage at the lowest point. Fixation must be employed to prevent yielding of the bone to muscular action or to gravity. The process of repair is slower than when the dead bone is removed earlier, but infinitely more rapid and more successful than when the sequestrum is removed at very much later periods.

In the chronic stage, with an old necrotic shaft usually worm-eaten and perforated with sinuses, enclosed by a shell of dense periosteal and often sclerosed bone, a condition so frequently met with in hospital practice, Nichols advises a similar method to that employed in the subacute stage, but in addition to removing the dead bone he excises a corresponding portion of the newly formed involucrum and then folds the surrounding periosteum as before. He thus succeeded partially in obliterating the cavity in one case reported.

This method cannot be applied to a large class of cases in which the cavity not only involves the shaft but also the epiphysis, cases which have been repeatedly curetted and packed with gauze until both the surgeon's patience as well as the patient's have been exhausted.

Three years ago I had an opportunity in Vienna of seeing Mosetig-Moorhof's results in the treatment of such cavities and in cavities situated elsewhere, especially of tuberculous origin.

In this method success is dependent on securing an aseptic condition of the cavity. For this purpose its roof should be thoroughly removed, preserving carefully the periosteum, the cavity itself thoroughly curetted and dense endosteal bone chiseled or gouged out, the cavity swabbed with carbolic acid and alcohol, thoroughly dried and filled with a preparation of melted and sterilized iodoform, cetaceum and oil of sesame. When the mixture becomes firm the periosteum and soft tissues are sutured and drainage, if necessary, provided for. The operation should be performed by the bloodless technique.

My own experiences is that it is necessary in septic cases to curette the cavity and employ antiseptics several times at intervals of a week or less, packing the cavity with iodoform gauze during the intervals.

I have not found this necessary in the tuberculous cases in which the results are uniformly good if mixed infection is not present.

When treatment is successful the wound heals with but little local or constitutional reaction, fibrous tissue grows rapidly into the mass which is slowly absorbed.

I have noticed in some cases which were only partially successful that the material was gradually expelled in greater or less quantity, healing finally taking place, and in other cases where infection developed late, requiring recuretted that the amount of new material developed in 8 or 10 days was much greater than by any other method of treatment which I have employed.

Judging from my own experience, the most difficult cases are those involving the lower end of the femur with sinuses in the popliteal space. Here I have opened the bone in front and secured closure of the posterior sinuses before attempting to "stop" the cavity, and even then with but indifferent success, pus developing even as late as the 10th and 12th day, showing the difficulty in securing asepsis.

I have used this method with satisfactory results in the lower end of the radius, the phalanges, the greater trochanter and the upper end of the femur, and in the head of the tibia in filling cavities of tuberculous origin, and though frequently one to two ounces have been used, on no occasion has iodoform poisoning resulted.

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THE DEVELOPMENT OF THE KNOWLEDGE OF THE CIRCULATION.

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"Life is short, and the Art long, the occasion fleeting, experience fallacious and judgment difficult." This, the aphorism of Hippocrates the father of medicine, expresses in few words the history of our knowledge of so universal a subject as the Circulation of Blood.

Since the dawn of humanity this fact has been ever present and it is only piecemeal, and through slow and interrupted stages that even our present knowledge has been reached, and what have even we, on whom the ends of the world are come, to show as the sum of our knowledge? Even yet we do not know the why or the wherefore of the heart's beating, and when the "golden bowl is broken," who of this wise age can make it whole again?

Our horizon is wider than that of our predecessors, because we stand upon their shoulders, but our vision is no clearer than theirs, and it may do us good to take a sketchy view of the stages by which we have come to such knowledge as we have, and of the men who carried higher the torch which they received.

Like the time when "the earth was without form and void, and darkness was upon the face of the deep," we can look back to the chaos of medical knowledge before the day of Hippocrates, when earth, air, fire and water were the elements known, and blood, phlegm, bile and black bile were the humours of the body, which, disordered in place or in amount were the cause of disease, and when health was regarded as the reward of Diet pleased, and illness the punishment by Diet offended.

Across this darkness, in 450 B. C., shone the light of the master mind of Hippocrates, the Aselepiad of Cos. He was above all things an observer and built his practices upon observation and not upon speculation. This was his great contribution to medicine, and though he accepted the prevalent views concerning the elements, and the humours, he did not slavishly follow these to the extinction of the evidences of the senses. Hippocrates knew much of the structure of the heart and its valves, and attributed life to the heat formed in the heart's interior and to the "pneuma" or spirit which came in with the breath.

Aristotle somewhat later amplified this conception of the use of the circulatory apparatus. To Aristotle, as to us, the heart was the cen-

tral organ and prime mover in the life of the body, but while we look upon it as a muscle propelling blood through the blood vessels, to him it was the seat of vitality, where the blood was elaborated and endowed with animal heat. He compared the stomach and intestines to the soil into which the blood vessels dipped like the roots of a plant, sucking up thence the nourishment, which later in the heart was changed into blood, but no such thing as a physical movement of the mass of the blood was suggested.

To the pulmonary artery and vein he ascribes a function different from that of the other vessels, namely, the conveying from the lungs to the heart of the "pneuma," or spiritus. This pneuma or vital spirits held a large place in the physiology of the time. It was not the air itself, but a vaporous ingredient derived therefrom, which, when mixed with blood, gave to it vitality and potency.

The cause of the heart's pulsation was by Aristotle regarded to be the ebullition of the liquids received from the digestive organs due to the innate heat of the heart. The element of fire, or principle of heat was the cause of all animal and chemical activity; warmth, motion, and fermentation were all manifestations, and thus its action upon the blood caused the passive movements of pulsation in the heart and the vessels attached to it.

Following Aristotle comes another name, that of Praxagoras, whose contribution to the advance of knowledge was the distinction between veins and arteries, to the latter of which only the quality of pulsation was attributed; but with this advance, he also is credited with the origin of the idea that the arteries carried air or pneuma alone, while the veins carried blood, and centuries later this mistake was still bequeathed from one generation to another.

The great school of Alexandria founded by the Greek Conqueror of that name, produced some time later two anatomists, Hierophilus and Erasistratus, after the former of whom is named the junction of the venous sinuses of the brain,—the Torcular Hierophili. They gave public human dissections and brought to light many facts hitherto unknown.

Hierophilus raised the conception of the brain's function from its lowly Hippocratic level as the source of the nasal secretion to that of the seat of conscious individuality, and organ of voluntary power.

This discovery called for a revision of the theory of the vital spirits, and Erasistratus recognised one spirit the "*πνευμα ζωτικον*" or vitrol spirits produced from inspired air, and sent from the left ventricle through the arteries. It was the cause of the heart beat and the pulse,

the source of heat and the direct agent in nutrition. The other the “*πνευμα ψυχικον*” or animal spirits which was elaborated in the ventricles of the brain and passing by the nerves was the cause of consciousness, perception and motion. Strange as it may seem this doctrine obtained even to the 16th and 17th century.

The Alexandrian School, also, well described the cardiac valves, but though their structure and evident function were known, they offered no hint of a circulation of the blood.

To the Alexandrians the diastole was the active phase of the heart, sucking into the right ventricle some blood for the nourishing of the lungs and into the left ventricle some “pneuma” for the arteries, the escape of which the valves were to prevent.

To sum up, the school at Alexandria furnished the body at large, on the one hand, with blood by the veins for its nutrition, and on the other, through the arteries with the “pneuma” as its controlling force, but acknowledged the possibility of anastomosis between these channels, but this anastomosis was looked upon as pathological and undesirable rather than as a normal process.

About 130 A. D. a star of the first magnitude appeared in the medical firmament. Claudius Galen, who, as the culmination of the knowledge of the olden time, was also destined to be the preserver of medical science through the dark ages. He was the logical successor of Hippocrates, and like the Father of Medicine steered from the hair splitting disputations of many of his contemporaries, toward a rational system founded upon observation.

The doctrine of Erasistratus that the arteries contained pneuma or spirits and the veins blood, had been held for centuries, even in the face of haemorrhage from a wounded artery, and all the ingenuity of scholars was employed in explaining the presence there of a fluid which rightly belonged in the veins. The arguments to them were the difference in the structure of the two vessels, and the pulsation in the arteries, supposed only to be a function of the vital spirits.

But Galen with the spirit of his latter day prototype, John Hunter, whose motto was “Don’t think! Try it,” tested arteries of all kinds by making openings of all sizes in them, and in every case blood flowed out.

To quote his own translated words, “But why nature should have made two kinds of vessels to hold one kind of liquid, or how the spirits taken in by the breath can be transported through the body if the arteries are filled with blood, or how if the spirits be not so transported the pulse and voluntary motion can be preserved, all these are special

difficulties, proper to be investigated by themselves if regarded as matters of uncertainty. But they ought not to outweigh the direct testimony of visible phenomena."

Since Galen's views of the circulation were those to obtain until the 15th century it may be well to summarize them here.

The liver was the central blood forming organ; here blood was formed from chyle and here all veins arose; the pulmonary artery or vena arterialis was part of the venous system and like the other veins carried dark thick blood.

The arterial blood was lighter in colour, and spirituous, and as the veins arose from the liver the arteries came from the heart, and there obtained their heat and pulsatile force.

This pulsatile force was one of active expansion, resembling inspiration, by which blood was attracted, to be repelled in systole, thus keeping up a continual interchange of contents.

Out from the arteries passed to the skin excrementitious products, and by the arteria venalis or pulmonary vein, fuliginous vapours analogous to the smoke of combustion.

Galen accurately described the valves, but maintained that the closure of the tricuspid and mitral was incomplete, thus allowing some reflux in each direction.

But besides its mechanical action, the heart had a much more important one. It was the centre of organic life, the source and fire place of the innate heat by which the body was controlled.

The pulmonary vein received from the lung by openings too small to allow the escape of blood, the vital spirits and exhaled fuliginous vapours.

Though in some passages there are suggestions of a circulation, the general trend of his writings would indicate that he had in mind no such circulation as we conceive of, but rather such a mechanism as that by which pulsation in a vessel would draw the fluid from either direction and propel it toward every point.

He established the doctrine of anastomosis between terminal arteries and veins by opening an artery and bleeding the animal to death, when both veins and arteries were found empty.

Galen, also, left behind him the doctrine of the passage of blood through the interventricular septum which was for centuries to be accepted as an alternative to the circulation of the blood.

From the time of Galen until the 14th Century, his works were looked upon as Holy Writ, and most if not all, of the medicine, Grecian and Arabian, during the Dark Ages was a reflection from him. Even in the

13th and 14th centuries, when in Italy the glimmer of awakening learning became again visible, Galen was still the court of last resort in matters medical; and Mondinus and Carpi, the first two men who publicly attempted human dissection confined their attention to demonstrating Galen's doctrines.

But in the early years of the 16th century there came the Moses who was to lead the people out of their bondage to tradition into the freedom of independent investigation. He was not primarily a physiologist, but an anatomist.

Andreas Vesalius, a Belgian, who at the age of 28 issued from the printing press at Basle his epoch making work "*De Fabrica Humanis Corporis*" which is not only the foundation of modern scientific anatomy, but, in many points, remains to-day uncontradicted and unimproved.

Vesalius had a contract of sufficient magnitude on his hands to point out Galen's mistakes in structure, and to convince men of these on the evidence of their own eyesight, so that he made few attempts at interpreting functions and in the main was content to allow Galen's explanations to continue. But here and there he cannot refrain from a sarcastic comment. Galen's doctrine of the passage of blood through the interventricular septum he treats thus: "The septum of the ventricles, composed, as I have said, of the thickest substance of the heart abounds on both sides with little pits impressed in it. Of these pits, none, so far at least as can be seen by the senses, penetrate through from the right to the left ventricle, so that we are driven to wonder at the handiwork of the Almighty by means of which blood sweats from the right into the left ventricle through passages that escape human vision."

Vesalius' contribution to the knowledge of the circulation was the clearing away of the cobwebs of authority and tradition around the structure of the body, and in this way he opened the door through which, nearly a century later, Harvey would pass in and demonstrate the truths concerning function.

Between these two men there came in Italy certain others, each advancing knowledge a little farther. One of these, Realdo Columbus, a pupil of Vesalius though a vain and in many ways an ignorant man, described probably for the first time correctly, the pulmonary circulation in a book published in 1559, there stating that the pulmonary veins carry not air but blood from the lungs to the heart and that it is in the lungs and not in the heart that the blood gets its bright red colour.

Some, however, claim that Columbus' discovery was not his at all, but was copied from Servetus, of whom, as one of the most interesting characters, in the history of medicine, we might say a few words.

He was born in Spain in 1510. At about 20 years of age he became prominent as a disputant upon theological subjects, and for a book "The errors of the Trinity," was denounced by both Catholics and Protestants.

His medical and physiological discourses are intermingled with metaphysical and theological discussions, and it is in his last book "The Restoration of Christianity," published in 1553, that he unexpectedly announces the modern doctrine of the passage of blood through the lungs.

For the heretical teachings of his book, both his book and himself were burned at the stake by the order of Calvin in Geneva.

One other name deserves mention as a builder of the house of knowledge, this was Hieronimus Fabricius, also of the Italian school, who discovered the existence of valves in the veins, but in terms of the learning of his time explained their function as retarding the blood from going pell mell down hill into the feet and hands and becoming impacted there.

While Fabricius was teaching at Padua, a young Englishman who had studied at Cambridge came as a student in medicine and carried back to London not only the friendship of the venerable Venetian professor but a most laudatory diploma from the Paduan University. This Englishman, William Harvey, became a member of the College of Physicians and settled in practice in London. He became Lumleian lecturer to the College, and physician to Charles First, whose fortunes he followed through the Civil War.

It was in his first year as lecturer to the College, in 1616, that he set forth his discovery of the circulation of the blood, 12 years before it appeared in his book "An Anatomical treatise on the movement of the Heart and Blood in Animals." A small book of 72 pages it was at once a convincing demonstration of Harvey's doctrine, and a pattern for all future physiological inquirers.

As Vesalius used the evidence of eye and hand in making clear the structure of the body, Harvey made deliberate and repeated experiment upon living animals the basis of his conclusion in respect of the functions; reaching that conclusion by one long sustained argument built upon fact after fact, either discovered by himself, or like the valves of the veins, discovered by another, but till then wrongly interpreted.

The inconsistencies of the prevailing explanations which to lesser minds had been as "poppy and mandragora" inducing mental slumber, were to Harvey the efficient stimulus to inquiry.

Among these were the view that the diastole was the active phase of

the heart, when during each pulsation a wounded artery spurted blood out instead of drawing in air.

Again of the pores in the ventricle for the passage of blood, he says, "for in the first place—By Hercules! there are no such porosities, and if there were how could one ventricle draw from the other since both contract at once? And if the pulmonary vein carry spirits one way and fuliginous vapours another why are they not mixed?"

These and other difficulties set Harvey to work examining the movements of the heart in animals. These movements he at first found so confusing by reason of their rapidity that he almost despaired of understanding their sequence, but finally by patience and perseverance he convinced himself that the active phase of the heart was its systole, not its diastole, that at the systole the heart contracted in all its diameters and became visibly paler, and that with this systole there came the swelling of the vessels, long thought to be a part of their heart's diastole, consequently, he concludes that the arteries have no pulsating power of their own, but distend before the blood as the finger of a glove distends when blown full of air.

Before Harvey the auricles had been regarded as chambers of the veins, but he observed that in a dying heart the auricle died hardest and while it continued to contract, a wound made in the ventricle showed a spurt of blood with each pulsation of the auricle.

The rapid succession of movements in auricle, ventricle and arteries he compares to the mechanism of a musket where at the touch of the trigger the flint comes down, strikes the steel, knocks fire into the powder which explodes and drives the bullet to its mark.

With this as a beginning he takes up the stages of the circulation in order, first demanding: How is the blood carried from the veins to the arteries or from the right to the left ventricle? Here his immense amount of experiment upon various animals gives him his proof.

In fish, he says, which have no lungs and but a single ventricle, and in frogs and serpents which have lungs, the blood may be readily seen to pass to the heart by veins and leave by arteries, and if where lungs exist the blood may be shown to pass *to* them from the right and *from* them to the left ventricle, surely it must be admitted that it passes through the lung tissue!

From this demonstration Harvey approaches what is his most revolutionary statement. He argues thus: At each beat a certain amount of blood passes from the veins to the arteries. Even at its very least calculation, estimating from the altered capacity of the dilated and contracted ventricle, it must in a short time amount to more blood than

is contained in the whole body. As a result, to quote his own words, "I began to think whether there might not be a motion as it were in a circle. Now this I afterwards found to be true, and I finally saw that the blood, forced by the action of the left ventricle into the arteries, was distributed to the body at large and into its several parts in the same manner as it is sent through the lungs, impelled by the right ventricle into the pulmonary artery, and that it then passed through the veins and along the vena cava and so around to the left ventricle in the manner already indicated, which motion we may be allowed to call circular."

Having thus made his proposition, he first proceeds to prove the passage of the blood in the peripheral organs from the arteries to the veins.

This he does by two forms of ligature, the tight one constructing the artery, rendering the arm bloodless and cold, the moderate one constricting the veins only, rendering the extremity flushed and turgid.

Next he proves the passage back by the veins to the heart and here he makes use of the discovery of his master, Fabricius, the valves in the veins.

By ligating an arm these appear as little nodes.

Pressure above a node may empty the vein of blood in the upward direction, but cannot push it downward.

Thus by the undeniable testimony of visible, tangible and palpable facts, he proves his case.

It is notable, however, that he rejects an hypothesis long held which would have materially assisted his demonstration, that of direct anastomosis between arteries and veins, choosing rather to assume the passage of the blood by filtration through the parenchyma of the tissues.

It is characteristic of the man that he did not accept what could not be proved by the means available to him at the time.

Before Harvey men had loaded the idea of the vascular system with spirits, vital and animal. To these he gave no heed. His was a demonstration of a mechanism on a purely physical basis, and as such it freed physiology from the idea of the "spirits" forever, although the name lingered for a century.

It need not be thought that Harvey's views immediately displaced the teaching of centuries. Many and bitter were the attacks upon his revolutionary doctrine, but they served it well by bringing enquiry to bear upon it, which only brought added proof to Harvey's own masterly demonstration.

Harvey died in 1657, at a good old age, having the satisfaction of

seeing in his own lifetime his doctrine received by all, but the most hide-bound conservatives.

In 1622, halfway between Harvey's first announcement of the circulation and the publication of his book, Aselli, an Italian, discovered the Lacteals, and 25 years later Jean Pecquet, of Paris, made known the discovery of the Thoracic Duct and Receptaculum Chyli. This immeasurably enhanced the value of Harvey's discovery.

Four years after Harvey's death, Marcello Malpighi, whose name is embalmed in so many of the body-structures, supplied with his microscope the missing link in Harvey's chain by showing the capillary circulation in a frog's mesentery.

Somewhat later Leeuwenhoek, with an improved lens, saw the red corpuscles and followed the circulation in the tadpole's tail.

This description is so realistic, and his pleasure in his work so real that I cannot refrain from quoting his words, " Yet what was most remarkable was to see the manifold small arteries that came forth from the great one, and spread into several branches; and turning come into one again, and were reunited, that at last they did pour out the blood again into the great vein, this last was a sight that would amaze any eye that was greedy of knowledge."

From this onward it is only possible to touch the physiology of the circulation in the high places, while coming down to the present day. While Harvey approached the circulation from the side of anatomy, Borelli, a pupil of Galileo, somewhat later brought to its aid the new physics.

He demonstrated the function of the arteries which by virtue of their elasticity maintained the pressure which the heart initiated. About 60 years later in 1726, Rev. Stephen Hales, a parish clergyman of the Church of England, who was interested in natural science, first estimated by using a horse the actual pressure of the blood in the vessels of an animal.

In the 18th century, also, Haller, of Berne, who may take rank with Vesalius and Harvey, commenced the modern enquiry into the cause of the heart beat and in this connexion he enunciated the doctrine of Irritability, to which he attributed the heart's rhythmic movement.

That the heart in its action was independent of all external causes, was worked out early in the present century, but that though independent, it was still influenced by various impulses was the classical contribution of the Weber brothers, who in 1845 demonstrated the inhibitory power of the vagus. That the heart itself contained nervous ganglia was shown later by Bidder and Remak and since then war has been waged

between those who would look upon the muscle and those who look upon the nerve-elements as the first cause of the heart beat. But like the contention as to whether the hen existed first, or the egg, much may be said on both sides, and certainly much has been said. Of the myogenic theory, Gaskell has been the chief exponent.

Of late much has been said of the chemical constituents of the heart's environment as a cause of its rhythm, and it is among such subjects as these we find ourselves at present.

It would not be fitting did I leave out some reference to the man who most of all has connected physiology with clinical medicine and pathology.

This man was Lænnec, the inventor of the stethoscope which brought the sounds of the heart and their changes in disease into relation on the one hand with the results of physiological experiment, and on the other with the findings at the autopsy table, thus indissolubly connecting a knowledge of the normal with the pathological by means of accurate clinical methods which should be the ambition of every honest student of the healing art.

It would have been impossible to mention a fraction of the names associated with the development of our knowledge of this subject, but I have attempted to point out a few of the landmarks and to show the direction in which they pointed the thought of their time.

From the study of the whole subject it seems to me that no more useful conclusion can be drawn than that facts carefully observed and accurately recorded, even though at the time they bear no evident relation to existing theories, may, when added to other facts similarly obtained, immeasurably advance medicine as a science and as an Art.

It was in the observations of Hippocrates, Galen, Vesalius and Harvey that vitality and permanency existed, while the speculations and traditions which attached to these were gradually, but surely, sloughed off to give place to the new and healthier tissue of succeeding observation.

ULCERATION OF THE CORNEA FORM THE DIPLO-BACILLUS OF MORAX-AXENFELD.

BY

HANFORD MCKEE, B.A., M.D.,

The case which I have brought before the Society this evening is of interest chiefly from the result obtained by most conservative treatment.

Read before the Montreal Medico-Chirurgical Society.

That cases of ulceration of the cornea, caused by the diplo-bacillus, do occur has been known for some years.

In 1898 Petit reported three cases of hypopion keratitis in which he found the diplo-bacillus called by his name.

The cases all resembled ordinary cases of serpiginous ulceration of the cornea of ordinary degree.

Peters reported two cases; Pflüger saw nine cases; Hoffman and Sweet saw two cases; Schmidt, in 193 cases of diplo-bacillary conjunctivitis, saw four times deep ulceration of the cornea.

Paul, of Breslau, reported 26 cases, while Erdman in 342 cases of diplo-bacillary conjunctivitis saw ulceration of the cornea in 30 of them.

In Montreal I have seen 70 cases of diplo-bacillary conjunctivitis, and on two occasions ulceration of the cornea.

This patient, G. H. B., 50 years old, a teamster, came to the outpatient department of the Montreal General Hospital, January 17th, 1906, and complained that for two weeks past his left eye had been "sore," and that during the last two days the eye had been swollen and very painful. There was no history here of trauma, no sign of tear sac trouble.

The condition of the left eye was as follows: marked blepharoconjunctivitis, oedema of the bulbar conjunctiva, the surface of the cornea over its central third showed deep ulceration with a large hypopion, iris was dull, severe chemosis, pupil contracted. Vision = pl., T.=N.

The patient said he had had "sore eyes" all his life; the edges of his lids were always red, and his eyes were generally watery.

A smear was made from the surface of the ulcer and from the conjunctival sac, and tubes were immediately inoculated. From the surface of the ulcer diplo-bacilli were found, and were the only organisms seen. From the conjunctival sac the diplo-bacilli were found associated with the xerosis bacillus and the staphylococcus pyogenes albus.

The patient's eye was immediately irrigated with solution of sulphate of zinc, one grain to the ounce. Drops of scopalamine were instilled, and the patient was sent to the ward.

The treatment received there was as follows: Instillations of scopalamine; of zinc sulphate; frequent irrigations with warm boracic solution.

The patient made rapid progress.

The chemosis disappeared, the ulceration healed, and the patient has at present a very useful eye. Vision is $\frac{2}{3}$ of normal.

This case I have brought before you because of the excellent result which was obtained by the most conservative treatment.

STONE IN THE URETER.

BY

R. P. CAMPBELL, B.A., M.D.

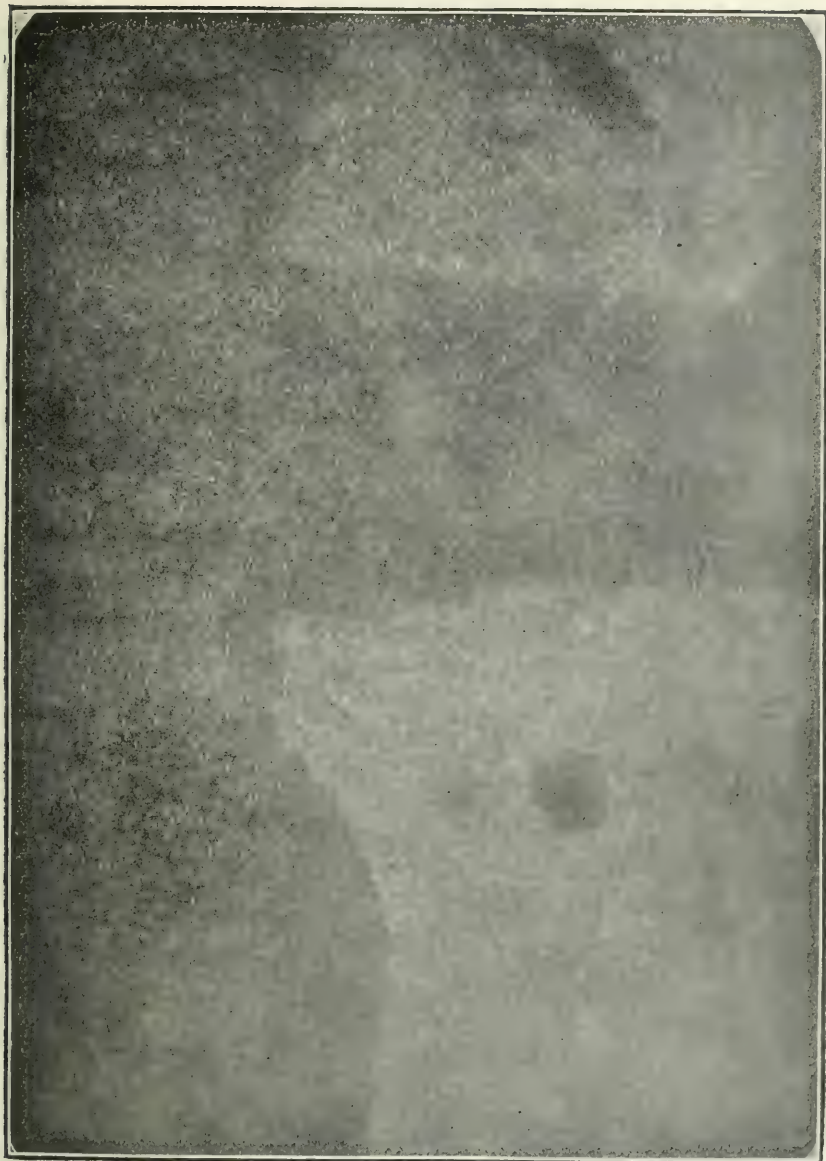
The diagnosis of calculus in the urinary tract is, in many instances, one attended by no small degree of difficulty. While the stone in the bladder is fairly easily recognizable by means of the stone searcher and cystoscope, stone at a higher level presents many more difficulties, not only as to its existence but, secondarily, as to its whereabouts. The differential diagnosis between gall-stone, appendicitis, intestinal obstruction in its early stages and true renal colic and more particularly Diett's crises in floating kidney thus demands all the aid which modern methods provide.

Undoubtedly the most important aid in conjunction with the symptom of pain—almost invariably present is the urinary analysis; when therefore, this proves negative or ambiguous it is necessary to look elsewhere for aid.

Should one accept much that is written on the use of the Röntgen rays in the diagnosis of renal or ureteral calculi one might almost believe that these can be detected with unerring accuracy. That all stones—even all denser stones, such as the oxalates, which under favourable conditions invariably throw a well marked shadow, are recognizable is far from being in accordance with the facts. Conditions in the living body, such as respiratory movement, pressure of fat, overloaded intestines, etc., play too prominent and confusing a part. When, however, such conditions can be minimized or corrected, then do the Röntgen rays aid the renal surgeon in no small degree. To quote Shede, "even then so uncertain are they that only when they yield a positive finding are they of value, from a negative finding one can draw no conclusions."

That the use of these rays can be of material aid is well illustrated in the following instance, taken from Dr. Armstrong's wards at the Montreal General Hospital.

A woman, 33 years of age, the mother of five children, the youngest one and a half year, who had experienced the usual infections of childhood, and about thirteen years ago had had an attack of inflammation of the bowels, so called, presented herself at the hospital complaining of



pain in the lumbar region. This pain radiated down the backs of her legs, into the abdomen and up the spine, perhaps affecting the right side the more. It had commenced suddenly, on rising one morning after a previous day's hard work, in the right side—about the level of the umbilicus, lasted three hours, necessitated morphine, occasioned vomiting, and was thought by the attending physician to be caused by a stone in the bladder. There was no subsequent jaundice—no blood in urine nor retention. After three or four days the patient was well again and remained so for one year, when the pain returned, less severe, but more constant. It has been present off and on ever since; a severe dragging pain subject to exacerbations, never so severe as in first attack, and sometimes absent for two or three weeks. This continued till January, 1905, when the patient had another severe paroxysm, very like the first, accompanied by vomiting, demanding morphine and relieved by rest in bed. Since then attacks have been more frequent, very similar in character, never followed by jaundice nor by any change in urine. The patient has lost about 25 pounds in weight during last two years.

On examination the patient proved to be a well developed, poorly nourished woman. The thorax negative. The abdomen soft and pliable—permitting thorough palpation; the right kidney being palpable to its lower quarter. Below this is the right nipple line, and slightly above the iliac crests a small not very tender area could be distinguished. A catheterized specimen of urine showed an acid reaction—a specific gravity of 1025, a trace of albumen, a small quantity of pus and numerous crystals of calcium oxalate.

A provisional diagnosis of stone in the ureter was made, and a Röntgengraph prepared with accompanying result—a definite right shadow $\frac{1}{2}$ inch from border of the spine and one inch above the chest of the ileum $1\frac{1}{2} \times 1$ cm. in diameter. A second exposure confirmed the first, and on March 13th, by means of a lumbar incision extending forward, the ureter was exposed and an impacted stone of the above dimensions or slightly larger, consisting of "calcium oxalate," was removed from a spot about $1\frac{1}{2}$ inches below the pelvis of the kidney. The wounds in ureter and skin were closed and patient made an uninterrupted recovery.

Calculi in such positions are undoubtedly more easily distinguished than when in the kidney itself, not only because here they are influenced by respiratory movements, but also because they are free from the shadow of the ribs above the pelvis below, a fact of no small importance from the radiographer's standpoint.

T H E

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A Monthly Record of the Progress of Medical and Surgical Science.

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THE INVESTIGATION OF SLEEPING-SICKNESS.

The Medico-Chirurgical Society had a great treat on Friday, 16th March, in listening to Dr. John L. Todd's lecture upon the investigations of the expedition of which he was a member, to study the sleeping-sickness of Africa. Dr. Todd is a recent graduate of McGill University, who, after a term of service in the Royal Victoria Hospital, joined the Liverpool School of Tropical Medicine, for which institution he made several journeys to the West African coast. While at work, with Dr. Dutton, in Gambia, they were recalled for the purpose of organizing an expedition sent under the joint auspices of the King of the Belgians and the Liverpool School into the Congo Free State, to study sleeping-sickness as it existed there, and, if possible, find out a method of preventing its further spread. Dr. Todd, who has, since his return, appeared before learned societies of Liverpool, London,

Oxford and Brussels, dealt with the general features of two years' work, which began at the mouth of the Congo, covered 2,000 miles of travel in the Free State, and resulted in the establishment of certain facts of great interest and usefulness, though it was at the price of the life of Dr. Dutton, one of the foremost young men in the ranks of workers upon Tropical Medicine.

Dr. Todd was greeted by an overflowing meeting of the Society, and showed a series of very interesting lantern pictures, mostly photographs from his own camera. The expedition, which consisted of Drs. Dutton and Todd, with Dr. Heiberg, a German physician who had spent several years in the Congo Free State, whose connection with it was official rather than scientific, went up the Congo from its mouth to Kasongo, which lies about 250 miles from Lake Tanganyika, which forms the eastern boundary of the Free State; at this point they turned and retraced their steps.

At the present time, when we hear so much of atrocities in the Congo Free State, it is interesting to hear the testimony of one who knows. In conversation, Dr. Todd states that he has not had personal knowledge of actual cruelty practiced by white men upon black, and further, that the relationship of the whites to the blacks is precisely a reproduction of the early history of commercial colonization in this country; the trading companies of the Congo Free State are the Hudson Bay Company of our own country; further, he bears testimony to the efficiency with which alcoholic liquor is kept out of the hands of the natives.

The expedition examined in various ways many thousands of natives, and established the fact that nearly all general glandular enlargements, without evident cause, such as syphilis or tuberculosis, are cases of trypanosomiasis, even if the person so affected have not any other sign of the disease. The palpation of enlarged glands in the posterior triangle of the neck, is considered by the members of the expedition, as sufficient evidence of the existence of the disease, and this is an easy test, capable of being used by an intelligent layman. The blood often fails to show trypanosomes, when they are present, but the juice of enlarged glands, removed by hypodermic needle, is practically unfailing. Dr. Todd insists that the sleepiness is often but a terminal sign, is a kind of accident, and not necessarily an unfailing symptom of the disease. Change of character, lassitude, great physical weakness, and emaciation are constant features.

At the present time, the disease is spreading surely though slowly in Africa, chiefly by trade routes. In ten years, various estimates

place the loss of life in the Congo Free State up to half a million people. The disease is of such slow development, that progress in its study is necessarily slow, and, meantime, the spread goes on unchecked. The expedition has recommended that quarantine be made at certain points on the trade routes, where a white man, with proper authority, would allow no native to pass to the disease-free parts of the country, if he showed any glandular enlargement of the neck, as above described.

No remedy for the disease has yet been found. Combatting the trypanosomiasis of animals, Dr. H. Wolferstan Thomas, another McGill graduate, who has recently worked at Liverpool, has attained the best results so far, by using certain arsenical compounds. By the way, the Society may look forward to hearing from Dr. Thomas at a future day, a recital of the scientific dangers of Brazil, which will not be far, if at all behind those experienced by Dr. Todd in the Congo.

Dr. Todd made modest claims for the success of the expedition, but his figures, briefly stated, were sufficient to show that an enormous amount of work had been performed. The deductions made and the measures proposed seemed to the audience to be most reasonable and just ones. Of himself, and his own part in the expedition, Dr. Todd said little or nothing. Reading between the lines, one could not but feel that there was material in his personal experiences for many such interesting hours; and we voice the sentiments of the entire Society when we express our pride in our part-ownership of Dr. Todd and his achievements.

THE PUBLIC HEALTH.

The curious meteorological conditions which have prevailed in Canada during the past winter have been accompanied by unusual manifestations of disease. Typhoid fever and small-pox have been unusually prevalent, and in one or two instances went entirely beyond control.

The Provincial Board of Health has been called upon to cooperate in dealing with outbreaks of small-pox in widely separated parts of the Province. In February forty-six cases were reported from St. Cyrille. Within four weeks the number was reduced to five, and at the present writing the disease has been eradicated from that district. Cases have been reported from the counties of Arthabaska, Laval, Drummond, Compton and Wolfe. The news from the Seven Islands is rather alarming, and a considerable expedition has been dispatched to cope with an outbreak in that distant region.

Fortunately, Quebec is becoming a well-vaccinated province, and nothing is head of that stupid opposition to the measure which is so common in other provinces. In Toronto this opposition is so strong that the School Board felt obliged to rescind the rule that vaccination be compulsory.

But the open winter has especially favoured the spread of typhoid, not in Montreal, but in the country districts and outlying municipalities. At St. Martine, in the county of Chateauguay, an outbreak of forty cases has occurred, and is not yet under control.

The enormous emigration to Canada, the expansion of the newer towns without proportionate extension of sanitary appliances, has led, as might have been expected, to a diffusion of typhoid. The state of affairs which prevails at Fort William is a case in point. The inhabitants of that enterprising town committed the indiscretion of drawing their water from the river into which they discharge their sewage, and there was nothing extraordinary in the results. As long ago as January there were 106 cases with 53 deaths.

The authorities of Fort William followed the mediæval practice of denying that the disease was epidemic until four hundred cases had developed, and even then the situation was not frankly dealt with. An air of mystery was given to the outbreak even by the professional advisers who were called in. Instead of recording the number of cases actually existing, the number of deaths occurring daily, and the number of new cases each day, those in charge of the outbreak have fallen in with the local authorities in refusing to disclose the exact state of affairs. This is a public matter, and the public has a right to know the extent to which any locality is making itself a menace to the community at large.

THE NEW PROVINCES.

The physicians of Alberta are alive to the needs of the new Province. A meeting was held in Edmonton on February 27th, the result of which will in all probability be the formation of a college of physicians and surgeons for the Province of Alberta to take the place, so far as that province is concerned, of the present college of physicians and surgeons of the North-West Territories.

The old society, which is recognized by the ordinances of the North-West Territories, was for the three territories now constituted as the provinces of Alberta and Saskatchewan. The readjustment in legislative boundaries makes desirable a readjustment of territory under the

jurisdiction of the college of physicians and surgeons, and it was with this idea in view that the convention in Edmonton was called.

There were present at the convention: Dr. Brett, president of the council of the territorial college of physicians and surgeons; Dr. Seymour, of Regina, vice-president; Dr. Lafferty, of Calgary, registrar; and Dr. Stewart, of Rosthern, a member of the executive; besides Dr. Deveber, of Lethbridge, and some fifty members of the medical profession from points in northern Alberta. Of these, about thirty were from Edmonton; every Edmonton practitioner with the exception of one or two being present.

The result of the deliberations was that it was left in the hands of the executive council of the territorial college to call a meeting at some future date, the meeting to be authorized by the territorial college of physicians and surgeons as at present constituted, for the purpose of taking action to secure the necessary legislation to secure the formation of an Alberta medical society.

THE PREVENTION OF TUBERCULOSIS.

The sixth annual meeting of the Canadian Association for the Prevention of Consumption, and other forms of tuberculosis was held in Ottawa, on the 28th March. The object of this association is to interest the public, and arouse them to the peril of the disease, to the end that preventative measures be adopted.

Something has been done. The Senate has adopted a resolution in the following terms: "That in the opinion of the Senate the time has arrived when the state should take some active steps to lessen the widespread suffering and the great mortality among the people of Canada caused by the various forms of tuberculosis, and that a conference between the Dominion and Provincial Governments should be had at the earliest possible moment in order that the best mode of action in the premises should be adopted."

The House of Commons has also recorded that "the time has arrived when Parliament should take some active steps to lessen the widespread suffering and the great mortality among the people of Canada caused by various forms of tuberculosis."

As a consequence of these resolutions, a deputation of both houses waited upon the Premier, and after presentation of the case, it was agreed that the minister of justice should be requested to give an opinion stating how the government of Canada could best give effect to the unanimous wishes of the Dominion parliament.

Following up these resolutions a meeting of the executive of the Association was held, and a campaign of education was undertaken under the following resolution: "That inasmuch as the educational authorities in England, Europe and the United States are now moving as to the appointment of medical men to inspect educational institutions with reference as to the health of the children, in order, as far as possible, to obviate the spread of tuberculosis, this council is of the opinion that the educational departments of Canada should be invited to consider the matter."

Copies of this resolution were sent to the ministers of education in all the Provinces, and in many cases they were acted on. For example the Government of Nova Scotia issued a series of suggestions and instructions for the guidance of teachers, inspectors and health officers which must prove serviceable in promoting the health of the province.

PATENT MEDICINES.

The Vancouver Medical Association at its regular meeting of March 12th, 1906 resumed the discussion of Patent Medicines. There was unanimity in the conviction that laws should be enacted to eradicate the existing evils. It was pointed out that in their promiscuous sale there exists a real danger to the public and that gross frauds are being perpetrated and that in their advertisements morally dangerous literature is being circulated.

As is well known, the drugs that are commonly used in patent medicines are opium or its derivations, as found in consumption or colic cures and soothing syrups; cocaine in catarrh mixtures, acetanilid in headache powders, chloral hydrate in drink cures; belladonna, ergot and cotton root in preparations recommended as abortifacients; and alcohol which is used in medicines represented to cure all diseases. Most of these are poisonous and so immediately dangerous to life. Opium in any form is particularly dangerous to children. On the other hand, all are even more objectionable if taken for any length of time. At first they relieve symptoms or supposed symptoms or create pleasant feelings. This impels the user, who is unconscious of what he is taking, to continue their use until a habit is acquired, which eventually leads to the ruin of his mental, moral and physical nature. Yet these are the drugs which are sold in a secret way and without license.

The majority of these preparations as well as being dangerous, are fraudulent because the vendors of them, in their advertisements claim to cure many diseases which scientists know are incurable. But there

is another class of preparation which is absolutely fraudulent. They contain no drug of any medicinal value, but depend for their sale entirely upon the extravagant and false claims of the manufacturer. Thus the despairing mind of the imaginative neurotic is preyed upon.

Then, again in the advertisements which appear in our periodicals both religious and secular, very corrupting literature is constantly being circulated. This cannot but have a debasing effect upon some and is disgusting to all others.

The secrecy which the existing laws allow in connection with so-called patent medicines, is mainly responsible for all these evils. If persons knew, as they should know, what is offered to them, they would be able to discriminate between the beneficial and harmful and between the honest and dishonest. Many of the worst of the patent medicines are distributed through His Majesty's mails, which should not be allowed.

At the close of the discussion, the following resolution was unanimously adopted.

"Whereas in the opinion of the Vancouver Medical Association there exists a real menace to the community in connection with the sale of patent medicines:

"Whereas the evils are so complex that a proper solution can be arrived at only by competent disinterested persons.

"Be it resolved that the Dominion House of Commons, now in session, be petitioned to appoint a commission to investigate this whole matter with a view to enacting laws which will eradicate these evils."

This memorial is signed on behalf of the Vancouver Medical Association, by F. C. McTavish, M.B., William Stephen, B.A., M.B., and William D. Keith, M.B.

The thirty-eighth annual report on the lunatic and idiot asylums of Ontario shows that there were 6,213 patients certified insane on September 30th, 1905, an increase of 632 for the year, during which 1,130 patients were admitted. On September 30th, 1905, the number of patients was 4,613. The total cost of maintenance for the year was \$760,204, a weekly cost per patient of \$2.30. The revenue from paying patients amounted to \$114,916. There were 315 patients discharged cured during the year, one of these after twenty years. The number of deaths for the year were 343, a percentage of 5.97. Tuberculosis was the cause of 43 deaths.

The *Journal of Outdoor Life*, which is published at the Adirondack Cottage Sanitarium, New York, has just entered upon its third year. It has been the official organ of the National Association for the Study and Prevention of Tuberculosis. The Journal deals with the outdoor treatment of tuberculosis. It aims to point out the more common pitfalls that beset the unwary health-seeker, and to awaken in its readers an interest in outdoor life. It advocates competent medical supervision, fresh air, nourishing food and carefully regulated exercise.

Queens College, Kingston, has fallen into line in abolishing the distinction between summer and winter sessions for medical students. The summer session which opens on April 16th will be the last. Next year, instead of having two medical sessions, a long and short one, there will be one eight months' session. The college will open and close at the same time as the classes in arts and science and the medical convocation will be held in common with the others at the end of April.

Dr. Hans Schmaus died at Munich, on December 4th, 1905. His name was well known in the world of Pathological Anatomy, and the work which bears his name has already appeared in four languages. He was a collaborator of the *Deutsche Medizinische Wochenschrift*, and a valued contributor of the *Lubarsch-Ostertag "Ergebnisse"*; he was in his 43rd year.

Ontario nurses are seeking incorporation from the Legislature. They desire to be known as the "Graduate Nurses' Association of Ontario." They wish to prescribe courses of instruction and hold examinations and grant diplomas. The government of the body is to be vested in an executive council of fifteen, four of whom are to be medical men.

Reviews and Notices of Books.

INTERNATIONAL CLINICS: A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles, Edited by A. O. J. Kelly, A.M., M.D. Volume IV Fifteenth Series, 1906. J. B. Lippincott Company, Philadelphia and London.

An indication of the excellence of this volume is afforded by the contents which we reproduce: *Treatment*: The treatment of Psoriasis, by William S. Gottheil, M.D. The therapeutic value and the mode

of action of physiological saline solution, by Dr. Hallion and M. Carrion. The treatment of some common gastric disorders, by Norman B. Gwyn, M.B. On the internal use of carbolic acid, by Moritz Benedikt, M. D. Nervous disorders in which psychotherapy may prove of value, by Gilbert Ballet, M.D.

Medicine: Empyema, with report of thirty cases, by J. N. Hall, M.D. The value of "post-tussive suction," as a sign of excavation in the lung, by D. Barty King, M.A., M.D., M.R.C.P. A method of abdominal palpation, by Alfred E. Thayer, M.D. The later stages of cirrhosis of the liver, by Sir Dyce Duckworth, M.D., LL.D. The thyroid gland, its anomalies of secretion and their manifestations and treatment, by Thomas R. Brown, M.D. The symptomatology and diagnosis of Malta fever, with the report of additional cases, by Charles F. Craig, M.D.

Surgery: The results of operations, such as gastro-enterostomy, pyloroplasty, etc., in the treatment of diseases of the stomach, by John B. Deaver, M.D. Phlebitis, thrombosis and embolism following abdominal and pelvic operations, by William A. Edwards, M.D. The study of the clinical course of joint tuberculosis by means of the X-Rays, by Albert T. Freiberg, M. D. Post operative surgical neurasthenia, with special references to cases, by Edred M. Corner, M.A., B.C. (cantab.) B.S.C., F.R.C.S. Eng. The etiology and early diagnosis of acute peritonitis, with the report of illustrative cases by Benjamin T. Tilton, M.D. Cysts of the lesser peritoneal cavity, by J. F. Binnie, M.D. The diagnosis of surgical diseases of the kidney, by J. Garland Sherril, A.M., M.D.

Obstetrics and Gynaecology: A study of ectopic pregnancy, with a report of twenty-seven cases, by Thomas A. Ashby, M.D. Sixty cases of extra-uterine pregnancy, by Franklin S. Newell, M.D. Pelvic haematocele and haematoma, by Cuthbert Lockyer, M.D. (Lond.) B.S., F.R.C.S., Eng. The medical treatment of the menopause, by Reynold W Wilcox, M.D., LL.D.

Pathology: An experimental study of the effects of Roentgen Rays upon the blood forming organs, with special reference to the treatment of leukaemia, by Aldred Scott Warthin, Ph.D., M.D. A contribution to the study of eosinophilia, by Charles E. Simon, M.D.

Ophthalmology: Syphilitic neuritis of the optic nerve with impending blindness successfully treated with calomel injections, by Louis Jullien, M.D.

GALL-STONES AND THEIR SURGICAL TREATMENT. By B. G. A. MOYNIHAN, M.S. (Lond.), F.R.C.S., Leeds. Second edition revised and enlarged. Philadelphia and London: W. B. Saunders & Company, 1905. Canadian agents: J. A. Carveth & Co., Ltd., 434 Yonge Street, Toronto.

The first edition of this work was completely exhausted in eight months. In the present edition the text has been carefully supervised; many additional case-records have been incorporated in the various chapters; several new illustrations have been added and a new chapter on abnormalities of the gall-bladder and bile-ducts.

Many of the reports of absence of the gall-bladder have been more or less inaccurate. The gall-bladder may be extremely small and shrunken, may be within the liver wholly or in part, and in certain instances has been found on the under surface of the left lobe. The author, however, finds examples in which it was not present at all. This chapter is of great interest, the matter being drawn from literature and from the great museums of the London hospitals. Mr. Moynihan is a master of technique and the chapter on the preparation of the patient, the operator, his assistant and the sutures and instruments is full and complete in detail. His use of rubber gloves, and long sterilized sleeves is abundantly proved to be safe and to give good results. He prefers iodine catgut prepared by the simple method of Claudius, and Pagenstecher's celluloid thread. Linen thread is strong, smooth, cheap, and has much less capillary attraction than silk. This latter point is easily demonstrated and is one of its decided advantages. It can be boiled three or four times. After that it had better be thrown away.

The whole subject of cholelithiasis and the various operations on the bile passages are clearly outlined, credit being given to those who have contributed to the present high standard of this important work. The illustrations and coloured plates are clear and distinct.

MANUAL OF PATHOLOGY, by W. M. LATE COPLIN, M.D. Fourth Edition, 1905, Philadelphia. P. Blakiston's Son & Co.

Originally published in 1904-5 as "Lectures in Pathology" this work has passed through four editions and now appears practically as a new work. While the former editions were utterly inadequate as manuals on pathology, the one before us, is revised, re-arranged and largely re-written. Of the work in its present garb we have little to say but praise. Some would perhaps, like ourselves, be disposed to relegate such

subjects as post-mortem examination, bacteriological technique, and the clinical examination of the blood, urine and sputum to works specially devoted to laboratory methods or to clinical diagnosis for it is difficult to deal with those branches at all adequately without encroaching on valuable space or producing an unwieldy volume. The arrangement of the chapters might in some places be a little more logical and orderly, but on the whole not much fault can be found on this score.

The various subjects are treated adequately, the illustrations are numerous and generally elucidate what they are intended to exemplify, and a useful bibliography has been appended. The result is a book that is eminently readable, accurate, and comprehensive, and withal kept within a suitable compass. The illustrations are largely original and are simple in character reminding us of those in Ziegler's classic work. On the whole, in our opinion, this is one of the most satisfactory books on this important subject which has yet appeared in English.

A. G. N.

A MANUAL OF DISEASES OF NOSE AND THROAT. By CORNELIUS GODFREY COAKLEY, A.M., M.D. Third edition, revised and enlarged. Illustrated with 118 engravings and five coloured plates. New York and Philadelphia: Lea Brothers & Co.

That a third edition of this work should be issued in comparatively so short a period of time, must indeed be gratifying to the author. The present edition is a decided improvement over the previous one. The chapter on "Diseases of the Accessory Sinuses" has entirely been re-written, and new diagrams added. The work generally is well written, and the subject matter well up to date. But one observes with surprise in a work as extensive as this, and elaborating so many details of the different subjects as it does, that there is omitted from consideration "Septic Oedema of the Larynx," and "Foreign Bodies in the Bronchi," two subjects which, at least, a general practitioner or student for whom this book apparently is written, should have some knowledge of.

In the section on "Deviation of the Septum," one notes the absence of the operation of "Re-Section," for the relief of this condition, which has been placed upon so satisfactory a basis, that the results in the majority of cases are far better than the method advocated in this text book, namely, "The Asch Operation." The diagrams are good, but the coloured plates are poor.

H. S. B.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS; OR, THE ACTION OF DRUGS IN HEALTH AND DISEASE. By ARTHUR R. CUSHNY, M.A., M.D., Aberd.; Professor of Pharmacology in the University College, London, England; formerly Professor of *Materia Medica* and Therapeutics in the University of Michigan. Fourth edition, thoroughly revised. Illustrated. Lea Brothers & Co., Philadelphia and New York, 1906.

Professor Cushny's text-book is too well known to require a repetition of the commendation that has been given previous editions. The present (fourth) edition has been published, following the revision of the *United States Pharmacopoeia*, and it takes note of the progresses of the last two years. This has brought many textual changes in the book, and one or two items have been largely reconsidered and amplified, especially chlorform and wood alcohol. The chapter on the former drug is a business-like, condensed, straightforward exposition in which the author takes up the case between ether and chloroform in the light of late investigations, and gives a most useful and most direct *resumé* of the practical points concerned. In the chapter upon wood-alcohol we notice reference to the well-known work of Buller and Wood.

The bibliography, which was a very useful feature of previous editions, is curtailed to admit the later works, by means of which, however, the practical utility of the whole is increased rather than diminished, as the later works frequently contain the references to older ones which have been superseded.

URINARY ANALYSIS AND DIAGNOSIS BY MICROSCOPICAL AND CHEMICAL EXAMINATION. By LOUIS HEITZMAN, M.D., New York. Second revised and enlarged edition. New York: William Wood & Company, 1906.

The portion of this book devoted to a description of the chemical examination of urine is fairly accurate. As much cannot be said for Part Second, which deals with Microscopical Examination. We only wish that the author's claims as to the amount of information to be gained by a microscopical examination of the urine could be substantiated. Take, for example, the chapter on pus corpuscles, which, by the way, the author states "are derived from emigrated white corpuscles, connective tissue cells, and the epithelia," and that "occasionally pus corpuscles have cilia. These arise from the ciliated columnar epithelia of the uterus, and when present justify the diagnosis of an endome-

tritis." Furthermore, the author is able to tell the probable duration of any case of disease from the character of the granulations seen in the pus corpuscles. No less extraordinary information can be gleaned from the forms of epithelia found in the sediment. Further extracts are unnecessary. If the teaching of the book were not absurd, it would be dangerous.

THE SIGNS OF INTERNAL DISEASE; With a brief consideration of the Principal Symptoms thereof. By PEARCE KINTZING. B.Sc., M.D., Professor of Physical Diagnosis and Diseases of the Heart, Maryland Medical College; Physician to the Franklin Hospital, Baltimore, Md. Illustrated. Cleveland Press, Chicago, 1906.

Professor Kintzing has foreseen that someone will say that there is no end of the making of books, and he has protected himself by stating that he here puts his ideas into concrete form for teaching. The student thus obtains a handsome volume of lecture notes, somewhat amplified, it is true, but still lecture notes. The book can not lay claim to be a treatise of Physical Diagnosis, nor yet a text-book on certain parts of internal medicine, although the section headings might lead one to that conclusion. Since Professor Kintzing claims these to be merely lecture notes for students, he can be congratulated on their handsome form and appearance. There is a great deal of information contained in the book, which is accessible by means of a more than usually full index. The wood cuts too often are of well known instruments, the photographs in some cases are unnecessary, and in several instances so dimly reproduced as to be useless, but the drawings are good.

CHRISTIANITY AND SEX PROBLEMS. By HUGH NORTHCOTE. M.A. Philadelphia: F. A. Davis Company. Price, \$2.00, net.

This book has a good deal to do with sex, and very little with Christianity—or, it may be added, with decency. The heading to Chapter VII. is a fairly adequate description of the whole book "further aspects of fornication." The author describes his production as "a series of fragmentary and imperfect studies." In this we agree. Apparently Mr. Northcote is a clergyman, probably a master in a school, in which case he should not occupy his mind with these nasty things. The letter which is set forth as proper to be sent "To a boy beginning school" would arouse only disgust and shame. It might bring the writer under the notice of the Postmaster-General. Impurity amongst boys exists for the most part only in the minds of their elders.

THE TREATMENT OF GONORRHOEA IN THE MALE. By CHARLES LEEDHAM-GREEN, M.B., F.R.C.S. London; Baillière, Tindall & Cox; Toronto: J. A. Carveth Co., 1906. Price, \$1.50.

This is a monograph upon the pathology and treatment of gonorrhœa. It takes account of the knowledge which is contained in scattered papers, chiefly of Continental origin, and makes it available for English readers. The introduction gives a trivial historical account of "the perilous infirmity of burning." The anatomical description of the parts involved is clear and correct. The author adds nothing to previous knowledge, because there is nothing to be added. Oil of sandalwood, mild injections or none—that is the treatment of gonorrhœa. It is an affair of management, and the author makes short work of specifics and abortive treatment.

THE PHYSICAL EXAMINATION OF INFANTS AND YOUNG CHILDREN. By THERON WENDELL KILMER, M.D. Illustrated with 59 half-tone engravings, 12 mo., 86 pages. Extra cloth. Price, 75 cents, net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

This little book contains many of the directions which one is in the habit of giving to nurses. One sentence will serve to illustrate the style in which the author writes: "Pardon this seeming sidetrack from our subject, but it is the keynote to success." A writer who identifies a sidetrack with a keynote should refrain from writing. The illustrations are numerous and for the most part unnecessary. Everyone knows what a tape-measure, a pair of scales, or a stethoscope looks like. The pictures of the nurses are pleasing.

GYNÆCOLOGICAL DIAGNOSIS. By ARTHUR E. GILES, M.D., B.Sc., Lond., F.R.C.S., Ed. M.R.C.P., Lond. Baillière, Tindall & Cox, London, 1906. J. A. Carveth Co., Toronto.

This book of 200 pages is designed as a manual for students and practitioners, and, as such, it well fulfils its purpose. The author works from symptoms to diseases, and the diagnosis is carried only so far as the general practitioner may be expected to go. Microscopic methods have been omitted, as being more suitable for the specialist and pathologist. The drawings are original with the author. For the persons to whom the book is addressed it will be found more useful than many of the more pretentious volumes.

DIE ORTHODIAGRAPHIE, Ein Lehrbuch für Aertze. Von DR. KARL FRANCKE, Specialarzt für innere Leiden in München. J. F. Lehmann's Variag, München, 1906.

This 90-page book deals with the interpretation of X-ray photographs, from the standpoint of the advanced student of that art. The author's preface states frankly that it is not for beginners, and a considerable degree of knowledge of the apparatus is presupposed. Mathematical measurement is everywhere considered in great detail. The book is illustrated by many diagrams.

LABORATORY GUIDE IN EXPERIMENTAL PHARMACOLOGY. By CHARLES W. EDMUNDS, A.B., M.D., University of Michigan, and ARTHUR R. CUSHING, A.M., M.D., University College, London. George Wahr, Ann Arbor. Price, \$1.50.

This laboratory guide was developed in the University of Michigan. The course is well-ordered, and the directions are sufficiently full. A student who follows this guide will acquire a training of the greatest value.

NOTES ON GENERAL PRACTICE. By S. M. HEBBLETHWAITE, M.D., Lond. The *Scientific Press*, 1906. Price, 3s. 6d. net.

This is a very human book, written, apparently, by a man in general practice for a quarter of a century in the English country, and an assiduous reader of the *British Medical Journal*. There is in it the record of much experience and also much wrong inference, as in "The rearing of infants." One would like a quiet hour with Dr. Hebblethwaite. He is a kindly man.

Medical News.

THE MCGILL MEDICAL JOURNAL CLUB.

The first annual meeting of this club was held on Thursday, the 29th March, in the rooms of the Medico-Chirurgical Society, the president, Dr. E. W. Archibald, in the chair. The secretary, Dr. Nicholls, read his report, showing that some twenty-one journals were now on file and could be consulted by the members. The membership consisted of fifty-five in good standing. Arrangements were in progress to still farther add to the usefulness of the organization. Dr. Morrow, the

treasurer read his report, which showed the receipts to have been \$112.77 and the expenditure \$93.43.

The following officers were elected for the ensuing year: Hon. president, Dr. T. G. Roddick; president, Dr. Archibald; vice-president, Dr. A. A. Robertson; secretary, Dr. Nicholls; treasurer, Dr. W. S. Morrow. Dr. G. D. Robins was elected to represent the department of medicine on the council in place of Dr. Gillies, who is leaving the city. Drs. Roddick and Macphail were unanimously elected honorary members of the club.

This club was started in the fall of 1904, on the initiative of Dr. E. W. Archibald, for the purpose of amplifying the list of medical periodicals on file in the McGill University Medical Library. It had been found, especially by those engaged in research work, that the journals ordinarily available were far from sufficient, and it was thought that a small annual contribution from persons interested would result in the addition of a considerable number to this department of the library. The result of the experiment has been very gratifying. A large number were in attendance at the first meeting and with practically no canvass some sixty-two names were placed on the role of membership. Dr. T. G. Roddick was elected hon. president; Dr. E. W. Archibald, president; Dr. B. W. Gillies, vice-president; Dr. A. G. Nicholls, secretary, and Dr. W. S. Morrow, treasurer. These officers, together with one representative from the various branches of medicine, surgery and pathology, were empowered to act as an executive council to carry the scheme into effect.

As at present constituted, the club is open to all members of the medical profession in good standing, who will pay the annual fee of \$2.00. It is not restricted to members of McGill University. The income is devoted to the purchase of journals which are not already taken by the Medical Library. These journals are the property of the club, and may be consulted at any time by the members of the club. It may be mentioned that the periodicals are not purely special, but many of them will appeal to the general practitioner, so that anyone joining the club will be likely to find something of interest to him personally. It is open also for members of the club to suggest the names of journals which they would like to see in the library. These will be passed upon by the committee, and, if thought desirable, will be subscribed for so far as the funds warrant. At the end of the year the various journals are presented to the Medical Library of McGill University.

The committee named has met at irregular times during the past

year and is in a position to report a good deal of work accomplished. Progress was at first slow, owing to the desire of the committee to make satisfactory financial arrangements with the various publishers. Through the courtesy of the MONTREAL MEDICAL JOURNAL, the Journal Club was authorized to offer to the publishers of foreign magazines exchange with the MONTREAL MEDICAL JOURNAL, free of cost to the club. In the event of the subscription price of the desired periodical being in excess of that of the MONTREAL MEDICAL JOURNAL, the club was to pay the difference. Quite a few of the publishers communicated with accepted these terms, and one or two were good enough to send their journal entirely free. All this, of course, took time, but the committee is adding to the list of journals on file of the club from time to time. At present the following periodicals may be consulted:

Byron Bramwell's Clinical Studies, Glasgow Medical Journal, Médico-legal Journal, Journal of Obstetrics and Gynæcology of the British Empire, Archives d'ophtalmologie, Presse médicale, Presse médicale belge, Révue de Gynécologie, Révue hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie, Révue médicale de la Suisse Romande, Archiv. für Kinderheilkunde, Bio-chemisches Centralblatt, Beiträge zur klinischen Chirurgie, Centralblatt für die Grenzgebiete der medizin und Chirurgie Ergebnisse der Physiologie, Prager medizinische Wochenschrift, Wiener klinische Wochenschrift, Zeitschrift für Psychologie, Zeitschrift für Heilkunde, Zentralblatt für normale Anatomie und Mikrotechnik, Zeitschrift für ärztliche Fortbildung..

After the current number is on file, back numbers may be taken away on application to Miss Charlton, the librarian. The club is greatly indebted to the Medical Faculty for their generosity in providing a suitable cabinet for the display of the journals received. It is hoped that many more of the medical profession will see their way to assist the McGill Medical Journal Club, inasmuch as it affords an opportunity for obtaining a great amount of valuable reading matter at a minimal cost.

ROYAL VICTORIA HOSPITAL.

Report for month of February: Patients admitted, 258; patients discharged, 231; patients died, 14. Medical, 88; surgical, 94; ophthalmological, 23; gynæcological, 29; laryngological, 24. Out-Door Department: Medical, 726; surgical, 468; eye and ear, 342; diseases of women, 122; nose and throat, 467; total, 2,125. Ambulance calls, 69.

MONTREAL GENERAL HOSPITAL.

During the month of February 250 patients were admitted to the wards of the General Hospital, and 242 were discharged. The average daily sick in the hospital were 205, and the highest number on any one day was 211. There were 14 deaths, seven of which occurred within three days of admission. The outdoor consultations numbered 3,957. The ambulance responded to 140 calls. The average number of visitors at the hospital was 245.

A Medical Society has been formed in Alberta with the following officers:—Hon. President, Dr. Kennedy, Macleod; president, Dr. Brett, Banff; vice-presidents, Dr. Braithwaite, Edmonton; Dr. Lafferty, Calgary; secretary, Dr. Cumming, Calgary.

A sanitarium for patients suffering from tuberculosis at Kamloops is assured. The province has granted five thousand dollars, and a beginning will be made this year. It will be under the management of the British Columbia Anti-Tuberculosis Association.

The Sixty-Second Annual Meeting of the American Medico-Psychological Association will be held in Boston, on Tuesday, Wednesday, Thursday and Friday, June 12th to 15th, 1906. The headquarters of the Association, will be at the Hotel Vendome, where rates have been secured at from \$4.00 to \$4.80 per day, American plan. The Chairman of the Committee of Arrangements, is Dr. Geo. T. Tuttle, of Waverly.

The Second London Medical Exhibition will be held in the new hall of the Royal Horticultural Society, Vincent Square, Westminster, during the five days, Monday, Tuesday, Wednesday, Thursday, Friday, October 1st to 5th, 1906.

The object of the exhibition is to bring together appliances and preparations in which the profession is interested.

At the last meeting of the Council of the Medical Society of New Brunswick the following boards of examiners were elected:—

Registration—Dr. P. R. Inches, Dr. A. B. Atherton, Dr. G. A. B. Addy, Dr. T. D. Walker, Dr. J. W. Daniel, and Dr. Stewart Skinner.

Matriculation—Dr. H. V. Bridges and G. W. Hay.

The following officers were elected for the ensuing year:—President, Dr. J. P. McInerney; treasurer, Dr. Thos. Walker; registrar, Dr. Stewart Skinner.

Sixty-nine cases of measles, including 11 of the German type, were reported in Montreal last week, making a total for the past five weeks of 232 cases.

The sixth annual meeting of the Association for the Prevention of Tuberculosis was concluded at Ottawa on the 29th of March. The officers for the ensuing year were elected as follows: President—Hon. W. C. Edwards, Rockland, Ont. Vice-presidents—Dr. Thorburn, Toronto; Dr. Bayard, St. John; Mr. James Grant, Mr. Perley, M. P.; Mr. James Manuel, Ottawa. Treasurer—Mr. J. M. Courtney, C. M. G., Ottawa. The executive consists of one representative from each province.

The *British Medical Journal*, in its issues of February 3rd and 10th, published a long and laudatory account of Toronto and its public buildings, naturally devoting greatest space to its medical, surgical and allied institutions. The articles are profusely illustrated.

The sections will meet on August 21st, 22nd, 23rd and 24th. Besides the address of the president-elect, Dean Reeve of Toronto University, addresses will be given in medicine by Sir James Barr; in surgery by Sir Victor Horsley; and in obstetrics by Dr. Walter S. A. Griffiths. The lieutenant-governor's reception will take place on the afternoon of August 21st, and many garden parties and other social gatherings have been arranged.

Dr. W. J. Douglas, of Cobourg, died suddenly on March 28th.

Dr. Jakeway, of Stayner, Ontario, died, as a result of an accident, on 18th March, 1906.

Dr. MacGregor, of Riverport, Lunenburg, died on 6th March, 1906, in the 77th years of his age. He was a graduate of Harvard University in 1863.

Dr. Matthew Wallace, of Toronto, died on 3rd March, 1906, in the 57th year of his age. He was a graduate of the Toronto Medical School in the class of 1880.

Dr. George Pringle, 632 Church Street, Toronto, died February 16th, aged 72. He graduated at McGill in 1855, and practiced for many years in eastern Ontario. He removed to Toronto about fifteen years ago, but poor health prevented him from doing much work.

BRITISH MEDICAL ASSOCIATION.

SEVENTY-FOURTH ANNUAL MEETING, 1906.

TORONTO.

August 21st, 22nd, 23rd, 24th, and 25th.

Abstract of memorandum for officers of sections:

Meetings of Sections:—The sections will meet on Tuesday, Wednesday, Thursday and Friday, (August 21st, 22nd, 23rd and 24th) at 9.30 a.m., adjourning at 12.30 p.m. each day.

Sectional Committee of Reference:—The president, vice-presidents, and secretaries of each section will form a Committee of Reference, and shall exercise the power of inviting, accepting, declining, or postponing any paper, and of arranging the order in which accepted papers shall be read.

Guests:—Papers by guests will be presented on invitation. If the Committee of Reference desires to invite persons to read papers in the section who are not eligible to become members of the Association, their names should be submitted for the approval of the Council. If it is desired to ask any such persons to attend the meetings of the section and take part in the discussions a general permission to issue such invitations should be obtained. All papers read are the property of the British Medical Association, and may not be published elsewhere than in the *British Medical Journal* without special permission.

Discussions:—Secretaries are requested to communicate to the General Secretary a preliminary statement of the arrangements made for the discussions in the section to be laid before the Council at the earliest possible moment. This should consist of a statement of the subjects selected, together with the names, if possible, of the gentlemen who have undertaken to open the discussions.

Papers:—The offer of a paper should not be accepted on its title alone, and save, under exceptional circumstances, no paper should be accepted for reading until it has been sent to the secretaries.

Secretaries are requested to communicate to the General Secretary of the Association, 429 Strand, London, W.C., not later than June 15th, a complete list of papers approved and accepted for reading.

It is suggested that the secretaries resident in the United Kingdom should collect papers from members there, and the secretaries in Canada should deal with all papers in the Dominion and the United States.

Only titles of papers which have been accepted, and which may be reasonably expected to be read, should be included in the programme of sectional proceedings.

Offers of papers ought not to be accepted in excess of the number likely to be read. Failure to observe this condition leads to many inconveniences and gives rise to complaints of unfair preference.

Report in the British Medical Journal:—A report of the actual proceedings of the section will be published in the *British Medical Journal*, and in any communications addressed to persons who offer papers to be read in a section two things should be made quite clear:—

(1) That papers read are the property of the British Medical Association, and cannot be published elsewhere than in the *British Medical Journal* without special permission.

(2) That the authors of papers not read have no claim for the publication of their papers in the *British Medical Journal*. *Papers cannot be "taken as read."* If they are not read they form no part of the proceedings of the section.

Secretaries are requested to co-operate in preparing the report of the proceedings of their section for publication in the *British Medical Journal*, with the reporter of the *British Medical Journal* appointed to the section, and to hand to him all matters for publication for transmission to the editor of the *British Medical Journal*, 2 Agar Street, Strand, London, W.C.

The attention of authors should be particularly directed to the time limit (see below), and the text of papers submitted for publication in the *British Medical Journal* as part of the report of the section should represent what is actually read to the section.

It is important that each author should hand the text of his paper in proper form for publication to one of the secretaries of the section immediately after it is read. It should be made clear that neglect to comply with this request may result in the omission of the paper in question from the proceedings of the section subsequently published in the *British Medical Journal*.

Time Limit:—The attention of the Council of the Association has been called to the non-observance by readers of papers of the rules as to the time limit which is as follows:—"No paper must exceed fifteen minutes in reading, and no subsequent speech must exceed ten minutes." The attention of presidents and secretaries of sections is particularly requested to this rule.

DR. F. N. G. STARR.

DR. D. J. GIBB WISHART.

PROFESSOR J. J. MACKENZIE.

Honorary Local Secretaries.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

ANDREW J. McCOSH, M.D. "Surgical Intervention in Benign Gastric Lesions." *New York and Philadelphia Medical News*, March, 17th, 1906.

This contribution practically consists of the writer's conclusions on this new and important branch of surgery and may be given as follows: Many gastric "symptoms," formerly considered as merely functional, are caused by distinct anatomical conditions or pathological lesions. For diagnostic purposes the stagnation test is of much greater value than is any chemical examination of stomach contents. Spasmodic pyloric contraction frequently occurs as the result of derangement of gastric secretion or abrasions of the mucous membrane of the stomach and duodenum. Gastric hæmorrhage frequently occurs without the existence of the typical round ulcer coming from minute abraided spots, which may be scattered about throughout a patch of intensely congested mucous membrane. Not uncommonly, large inflammatory masses, constituting a palpable tumour, may exist, caused by and surrounding an ulcer. Formerly such masses were regarded as malignant. In many a gastroenterostomy was done and a fatal end prophesied. We now encounter some of these patients in a perfect state of health many years later, with complete disappearance of the mass. Based upon much experience, we can now generally at the time of operation, arrive at a correct diagnosis of the character of the masses. Duodenal ulcers are of frequent occurrence. While less common than gastric, they are now supposed to exist in the proportion of 1 to 3. In the great majority of cases of contracted pylorus, whether it be due to spasm, inflammatory hyperplasia of the circular fibres, or stricture with adhesion from an ulcer, a gastroenterostomy will effect a cure, or, at least, markedly relieve the symptoms. The mortality of this operation should not be over 5 per cent., provided that through neglect, the patients have not been allowed to drift into a semimoribund condition. This operation should, however, be done only after a reasonable length of medical treatment has been employed and found wanting. This operation will generally fail to cure cases of simple dilatation with atrophy of the stomach without constriction of the pylorus. That, following gastric operations, there must be, if we strive for perfect results, continuous dietetic and hygienic treatment, extending over months, or even years.

THOMAS GUTHRIE, M.A., M.B., B.C. (Cantab.), F.R.C.S. Eng. "The Treatment of Acute Intussusception." *The Practitioner*, February, 1906.

The great advance in the treatment of this condition may be seen when we compare the results obtained during the last twenty-five years. It is interesting to note that prior to 1895 no case is found in the records of St. Thomas' Hospital, London, of such a condition, and that from 1875 to 1885 only 18 cases are recorded; while in one year alone, 1901, no less than 21 cases were treated. Of the cases treated during the above decade less than 25 per cent. recovered, while, of those in 1901, we have a recovery of nearly 50 per cent. As regards the methods of active treatment, the only one of any value, apart from coeliotomy, is reduction by means of retrograde distension or inflation. The figures collected for this line of treatment give us a mortality rate ranging from 50 to 100 per cent. The combined methods also give us a very high mortality. Thus, of 10 unsuccessful cases of inflation, in which resort was had later to laparotomy, 8 died and only 2 recovered. As to the results of operative treatment, the statistics vary greatly according to the class of case with which they deal. In this, as in many other acute abdominal conditions, the time element is of the greatest importance. The figures given for those earlier cases in which reduction is still possible show a recovery rate of from 35 to 50 per cent., while, if, owing to delay, irreducibility or gangrene has supervened, little hope of success is presented by laparotomy. Gibson (*Ann of Surgery*, October, 1900) estimated that 94 per cent. treated within the first twenty-four hours were reducible on section, while only 61 per cent of those treated on the third day were reducible. In conclusion, it may be definitely stated that all the available evidence indicates that for every case of acute intussusception, apart from those advanced cases when the shock of an operation would certainly be fatal, immediate abdominal section is the proper treatment. Should circumstances be unfavourable for operative measures, and the case quite an early one, distension of fluid is worthy of trial, but, under the best conditions, can not be regarded at present as sound treatment.

DR. E. ULLMAN. "A Rare Form of Cyst Formation in the Kidney." *Archives Internationales de Chirurgie*, Vol. I., No. 1, 1903.

According to Kuester, one may classify kidney cysts into three groups: the first embraces those which have certainly arisen through softening of the neoplasm in which microscopically one can usually

find some small remains of tumour. The walls of the cells are fibrous, thickened, and contain frequently lime deposits. In the second group one gets cysts which arise from portions of the calices or of the pelves which have become cut off from their normal position. Nearly always one can find traces of the lining epithelium still remaining. The wall is thick and the contents are frequently represented by slimy, yellowish brown, semi-solid material containing cholesterol crystals and sometimes even pus. The cysts of the third group are believed, according to Virchow's opinion, to arise through a circumscribed interstitial nephritis; in the urinary tubules, which are here and there dilated, can be seen lining mucinous masses.

The author here reports a case of single cyst of the right kidney in a woman 31 years of age. It had caused pain at intervals for two years, sometimes colicky in nature and lasting for an hour; there was no definite hæmaturia. Nephrectomy was done. The specimen is described in detail. It contained a brownish, chocolate-like, slimy mass with thickened walls of a fibrous character. The kidney itself was somewhat atrophied. The cyst filled out the hilus of the kidney, but there was no communication between the cyst and the pelvis. It was roundish in shape, lay in the middle of the kidney substance and was about the size of a foetal head: it reached from the hilus to the capsule, the two poles of the kidney remaining free. Ullmann comes to the diagnosis histologically that the cyst owed its origin to the isolation of one or more of the calices from the rest of the renal substances, inasmuch as its wall was everywhere lined with epithelium in layers corresponding in appearance to that of the kidney pelvis. The kidney was broadly adherent to the liver presenting thereby the appearance of a tumour of the gall bladder and causing very naturally an error in diagnosis.

J. M. T. FINNEY, M.D. "Three Years' Experience with Pyloroplasty."
Surgery, Gynecology and Obstetrics, February, 1906.

In all, thirty-three cases have been operated upon after the method advocated by the writer in 1902. He is convinced that this operation offers greater advantages in cases of pyloric stenosis of benign origin, from whatever cause, than does gastroenterostomy. It is also claimed to be just as efficacious as gastroenterostomy in the presence of a bleeding or active ulcer. The one contra-indication to the operation is atonic-dilatation of the stomach, particularly when associated with dilatation of the duodenum, and in such cases operation is declined. The writer now performs gastroenterostomy only in cases of inoperable

carcinoma, or after pylorectomy. The objection urged against pyloroplasty of its difficulty in the presence of adhesions and dense cicatricial tissue about the pylorus he has found to be more fanciful than real. If one will make use of the procedure insisted upon, that of mobilization of the duodenum, it will be found perfectly possible and often easy to free the duodenum sufficiently to allow of its being brought out readily into the wound. Where there is much hypertrophy about the pylorus in cases of chronic ulcer it is better, as suggested by Rodman, to perform pylorectomy for those cases where the hypertrophy is moderate. It is the writer's custom to make the opening ample, perhaps, as much as 10 cm. in diameter. One of the most satisfactory features of the operation is the almost entire absence of pus and operative nausea and vomiting, due probably to division of the pylorus and the doing away of pylorospasm. His mortality has been nil in this series of 30 cases.

EDMUND OWEN, F.R.S.C. "Acute Bone Disease in Children." *Brit. Med. Jour.*, February 3rd, 1906.

In speaking of the development of a long bone the writer makes use of two expressions which are well worth remembering. As is well known, the epiphyses become ossified on to the shaft at puberty or at manhood, and the bone grows more "at what we will call the manhood-end of the diaphysis than at the puberty-end, because it has a longer time for the purpose." An excellent clinical picture of a case is cited, the easiness of making a wrong diagnosis brought out, and the method of making a differential diagnosis is made clear. He strongly advises early operation. To wait until one is sure of finding pus is to let injury be done to the bone which ought not to be. Even should the surgeon open up a bone and find no pus he has done no harm, and he may dress the case in the happy consciousness of the fact that he has done his duty. In all probability pus will be found coming out of the bone opening from the medullary canal a day or so later. The well established reasons for regarding the disease as primarily an affection of the young bone and marrow are given.

WILLIAM J. TAYLOR, M.D. "Report of a Case of Hypernephroma." *Amer. Jour. Med. Sc.*, February, 1906.

The points of chief interest in this case were its malignancy, the typical pathological picture, its large size, weight 6½ pounds, and the absence of hæmaturia. Operation relieved the man's condition for some four months when symptoms recurred, and death ensued a little over six months after operation, and about one year and a half from first appearance of symptoms.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

J. EVERETT DUTTON and JOHN L. TODD. "First Report of the Trypanosomiasis Expedition to Senegambia (1902)." Memoir XI., *Liverpool School of Tropical Medicine*.

During nearly a year occupied by the Expedition, the authors were able to study the trypanosomiasis in men and horses; they were at this time unsuccessful in attempting to transmit the disease from infected to healthy animals by means of biting flies. Of natives and others examined, six cases of infection were found in over a thousand examined, but the authors recognized at this time that this percentage was much lower than was actually the case.

They found ten out of thirty-six horses infected with the Gambian Horse Trypanosome (*T. dimorphon*), and this organism they studied experimentally, along with the form from the human beings, but without being able to determine the identity of the two forms. They found trypanosomes and other flagellates in various animals, such as frogs, tortoises, birds and mice.

DUTTON, TODD and C. CHRISTY. "Reports of the Trypanosomiasis Expedition to the Congo, 1903-1904." Memoir XIII. *Liverpool School of Tropical Medicine*.

While engaged on the work described in the last paragraphs, Dutton and Todd were recalled from Senegambia and sent to the Congo. Here they came in contact with many cases of trypanosomiasis, from whom the parasite was inoculated on experimental animals, and they found that laboratory animals were rather insusceptible, that when they did take the disease, the symptoms and course were very chronic, and that there was a regular periodicity with which the parasite could be found in the peripheral blood of the animals. From all their observations at this time they found no reason to suppose that the trypanosome of the Congo was a form different from that found in Gambia.

At Leopoldville they made their headquarters while conducting extensive investigations upon the "sleeping sickness," and they were able to conclude that the disease was truly trypanosomiasis, and that further, there were different types of disease which, while all trypanosomiasis, often failed to give the symptoms described as "sleeping sickness" symptoms. These different forms probably result from various degrees of severity of infection, and from the patients being seen in different stages. Many months can elapse after infection before

any symptoms are apparent; perhaps, owing to this fact, the authors were unable to find a true epidemic of the disease, although when on the Gambia six infections were found in a thousand people, and the Congo gave forty-six. The authors did not think that death occurred from the trypanosomes alone, since in nearly all autopsies, a secondary infection was definitely present.

The periodicity with which the parasites appeared in the peripheral blood was notable, but did not correspond to changes in temperature or pulse.

DUTTON, TODD and CHRISTY. "The Congo Floor Maggot." *Ibid.*

The authors found in the floors of dwellings and under beds a blood-sucking maggot, which fed at night, and proved to be a species of the Muscidae, hitherto known, but whose habits of parasitism had not been observed.

DUTTON, TODD and CHRISTY. "The Cerebro-Spinal Fluid in Sleeping Sickness (Trypanosomiasis); 104 lumbar punctures. *Ibid.*

The authors conclude that in some cases the parasites do not find their way into the cerebro-spinal fluid, but that if they do so, early in the disease, meningeal symptoms are apt to predominate; once in the fluid, they may again disappear from it, and periodicity in the numbers present in the fluid does not necessarily correspond with that of the blood. The tendency to infection of the cerebro-spinal fluid is greatest in the late stages of the disease.

H. WOLFERSTAN THOMAS and STANLEY F. LINTON., *Ibid.* "A comparison of the Animal Reaction of the Trypanosomes of Uganda and Congo Free State Sleeping Sickness with those of Trypanosoma Gambiense (Dutton).

Thomas and Linton experimented with an enormous number of animals of different sorts, mice, rats, guinea-pigs, cats, dogs, monkeys, sheep, goats, horses, and donkeys, and found that the same chronic form of disease was produced by the parasites from all the above mentioned sources, and they concluded that the animal reaction and morphology indicate that Trypanosoma Gambiense is the causative form of the Uganda and Congo Free State trypanosoma fever and sleeping sickness, whether the organism were obtained from blood or cerebro-spinal fluid. They found no acquired immunity against infection, and no transmission of immunity to offspring.

H. W. THOMAS and ANTON BREINL. "Trypanosomes, Trypanosomiasis and Sleeping Sickness." Memoir XVI., *Liverpool School of Tropical Medicine*.

These authors studied carefully the cases of sleeping sickness which had been transported to England, and combined the work previously done with *Trypanosoma Gambiense*. In additions to the findings of Thomas and Linton, they found that inoculation of baboons was possible, with chronic course and fatal termination; the periodicity occurred in animals as well as in man; no attenuation of the virulence of it was obtained by infecting resistant animals, though the virulence sometimes increased in a susceptible animal. In the horse the disease lasted as long as twenty eight months; and they did not find any morphological changes in the parasite after passing through hundreds of animals during three years.

Much attention was paid to a comparative study in infected animals of various forms of trypanosoma, and determined efforts made to cultivate the parasite in media after the method of Novy and McNeal. *T. lewisi* and *T. brucei* were successfully cultivated, and other forms have been kept alive in cultures even to a time of more than two months.

With regard to the treatment of trypanosomiasis, the authors tried many drugs without benefit: the most useful drug is atoxyl, a meta-arsenic anilin compound. In animals, by giving large doses, and by continuing those after the necessity for their administration had apparently disappeared, the effects were found to be good. Ehrlich and Shiga's experiments of trypanroth were repeated and verified, and a combination of atoxyl and "trypanroth" was found also to be useful.

Careful autopsy reports of human and animal cases are given by these writers; of the great amount of work embodied in this report, we have given in this abstract, no adequate impression.

J. EVERETT DUTTON (the late) and JOHN L. TODD. "The Nature of Human Tick Fever in the Eastern part of the Congo Free State." Memoir XVII., *Liverpool School of Tropical Medicine*.

This report is the work of Dr. Todd, as the lamented death of Dr. Dutton threw upon his surviving friend the work of publication of their common work; both had suffered from relapsing fever.

In November, 1904, a few days before Ross and Milne published their notes on tick fever in the *British Medical Journal*, the authors telegraphed to Liverpool that they had found a spirochæte to be the infective agent of tick fever of the Congo Free State, and that they

had been able to infect monkeys by the bite of ticks. The spirochæte is probably *obermeyeri*, can be transmitted by the bite of the tick, and in one case the authors were successful in transmitting the parasite by the bites of young ticks hatched in the laboratory from eggs laid by infected parents. The temperature chart of the disease in human beings is very characteristic; during two to four days high temperature with moderate remissions, then a drop to normal, where it continues for several days, after which there is a repetition of the febrile period, this being repeated again and again. In past times, this has always been considered malarial, and, as the therapeutic test was relied upon, the subsidence was considered a proof that it was the action of quinine on malaria, and the mistake was thus perpetuated. Experimental disease in monkeys and cases occurring in natives are recorded clinically and the reports of blood examinations given, with the morphology of the spirochæte and the tick (*Ornithodoros*), and notes of the distribution of the latter. The authors considered that a developmental process is carried on in the body of the tick.

DUTTON and TODD. "Gland Puncture in Trypanosomiasis." *Ibid.*

The authors found in their investigation of native cases that by far the most efficient method of determining the presence of trypanosomes is by puncture of the lymph glands, and examination of the gland juice; although, of course, even this is not an infallible method.

J. DRESCHFELD, F.R.C.P. "On Some of the Symptoms and Treatment of Graves' Disease." *Medical Chronicle*, January 1906.

With reference to treatment the author has not found success to follow the use of thymus gland extract; he has not tried adrenalin, considers that in some cases thyroid extract does harm, and gives his own observations in support of the use of antithyroid serum (Moebius) and thyroidectin, which is obtained from the blood of a thyroidectomized animal. Of 21 cases, 10 were cured, six improved. The author gives it by the month, 10 minims thrice a day and gradually increases the dose to 25 minims if the lower doses are not effectual. Care must be taken lest hyperthyroidism occur. He repeats, also, the figures of Kocher's wonderful series of cures by surgical treatment. In preference to the usually employed blood serum of sheep whose thyroids have been removed, Hallion, in *La Presse Medicale*, November 1st, 1905, advises a French modification, which is a glycerinated preparation of the entire blood. Referring to the symptoms of Graves' disease, Dreschfeld points out that dermatography is a very constantly present

symptom, which is often of use in the case of atypical nature. It was present in every case of his series, and in the severer ones was really an urticaria factitia.

F. KALISKI (Breslau). "On a New Test of the Stomach Secretion without the use of the Stomach-tube." *Deutsche Medizinische Wochenschrift*, February 1st, 1906.

The author refers to Boas' conclusion that alkalinity of urine after washing of the stomach or vomiting points to hyperacidity, and that unchanged reaction in the urine under the same circumstances indicate the production of organic acids; this, by the way of indicating the unfailing correspondence between acidity of the urine and of the stomach-juices. He refers to Sahli's test of glutoid capsules, which were dissolved by pancreatic juice, but not by pepsin and hydrochloric acid. The next step was the use of gold-beater's skin, which can be dissolved only by pepsin and hydrochloric acid at body temperature, and is impervious to pancreatic juice and lactic acid. Filling little sacs with potassium iodide, and tying them with "fibrin threads," the solution occurred and the saliva showed the presence of the iodine immediately. A further modification was the use of dental rubber for the sacs and catgut for the tie. This is the so-called "desmoid reaction" of Sahli. The author uses 4 cm. squares of dental rubber, covered with talc powder, lays in the middle the chemical to be used, twists a neck on the sac, and ties it with 00 catgut, taken from cold water. As soon as the sac is so made, he drops it in water, to determine that it does not leak, and to be assured that it is of heavier specific gravity than the fluid in which it will find itself in the stomach. To fill the "capsules," he uses 3 grs. potassium iodide, and tests the saliva for iodine; a second "capsule" is filled with methyl blue ($\frac{3}{4}$ gr.); this produces no change in the saliva, but colours the urine blue: the use of glacial acetic acid and heat may be needed to produce the blue colour in the urine test.

Certain laboratory tests were made to determine the effect of artificial solutions upon the "capsule." HCl .5 per cent. in 24 hours in the incubator had no effect; .25 per cent. HCl and pepsin dissolved them in 10 $\frac{1}{2}$ hours; lactic acid and pepsin had no effect; the stomach juice dissolved them in time varying according to the acidity and concentration.

Thirty-two healthy cases, without the test-meal, gave the reaction in an average time between 8 and 12 hours. Twenty-four cases of

disorder of the stomach were tested, controlled by the use of the tube and the test-meal.

Where free HCl was not present, the reaction was not obtained; all of his cases of carcinoma failed to give the reaction. Apepsia gastrica will equally fail to give the test, and the capsule will be expelled later in the faeces. In a general way, a deep blue reaction in 4 to 7 hours points to hyperacidity; 7 to 12 hours suggests normal acidity. The appearance of the test on the next day suggests sub-acidity, or motor insufficiency, and, as above stated, the absence of the reaction points to anacidity, unless in the unusual case of hypermobility where the capsule is passed into the duodenum by the great activity of the stomach. The same result occurred in a case which had had gastro-enterostomy performed.

J. McC.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

ARTERIOSCLEROSIS. A Review of the work in 1905.

The literature which has accumulated in 1905 on the subject of arteriosclerosis is a striking evidence of the active work accomplished in medical research. Arteriosclerosis forms probably one of the most difficult of pathological studies, so that with even all the investigations in this subject we are yet far from a solution of the problem. Probably one of the most important obstacles to the proper understanding in the work done and one that has led to such a confusion of ideas on the subject, is the definition of arteriosclerosis.

Jores formulated a definition of arteriosclerosis, and regarded only those cases in which microscopically the thickened intima of the vessels showed a longitudinal splitting of the internal elastic intima. That is, under his definition, the diagnosis of arteriosclerosis was only to be made with the microscope. Barr includes arterio-capillary thickening and also atheroma and calcification of the larger vessels under arteriosclerosis; while Marchand looks on it, as the process of the arteries in which the walls show nodular thickenings—principally in the intima—and one which is prone to undergo degeneration of a fatty, sclerotic or calcereous nature. The clinical diagnosis of arteriosclerosis is in the same state as when Lobstein named the disease, thirty-one years ago, little or no differentiation being made clinically between the different types.

However, our knowledge of arteriosclerosis has been materially enhanced by combining the clinical histories of cases with the pathological findings. Thus Marchand concluded from his post-mortem material that arteriosclerosis followed long continued tension, local lesions, toxic and infective processes and general alteration in the nourishment of the vessels. Wiesel found definite direct action of the typhoid toxin on the muscle fibres of the media, and also that the endothelial cells of the intima were stimulated in growth. Barr, on the other hand, believes that increased arterial tension leads to arteriosclerosis, in that the arteries cannot then enter the state of "repose" between the pulsations, for in this "repose," he says, the arteries derive their nourishment.

It was hoped that the animal experiments with adrenalin would clear up some of the obscure points in the etiology of arteriosclerosis. However, up to the present experimenters are not in unison as to the *modus operandi* of the adrenalin arterial disease. They are all more or less agreed on the pathological findings in the arteries after the use of adrenalin, but the conclusions how this is brought about, vary. Fischer finds extensive necrosis in the media of the arteries, and holds that this is produced by a direct poisoning of the part. He also points out that these weakenings of the media lead to aneurysmal dilatations of the wall. Sturli agrees with this and points out that such lesions differed entirely from arteriosclerosis as found in man. Erb, too, believes in the necrotic theory, and holds that the vasa vasorum play no part in the process. On the other hand again, Lissauer lays most stress on the contraction of the vasa vasorum, following the inoculation of adrenalin, leading to a diminished nourishment of the arterial wall. Later observers are inclined to believe that each of the factors plays a part in the production of the arterial disease, and that the combined toxic effect on the muscle fibres as well as the narrowing of the vasa vasorum leads to degenerative changes. That increased pressure within the artery can alone lead to the weakening of the vessel wall is discountenanced—unless it be taken that this increased pressure, stretching the wall causes a narrowing of the vasa within it, and in this way diminishes the nutrition of the middle and outer coats.

Klotz has recently shown that in all these cases the calcification which is so common in all arterial diseases is a direct outcome of the fatty degeneration attacking the different tissues. The muscular elements are found to be the first to undergo fatty degeneration, although in a few cases the internal elastic lamina primarily shows this change. In the case of the common post-mortem finding where a fatty change

is noted in the intima, this is shown to result from a fatty degeneration of the deep muscular elements in the intima, without any change being noted in the media. Ribbert believes that the fatty change in the intima is due rather to the stretching of the vessel wall so that the endothelial cells are pulled asunder, letting in the fat-laden lymph. This lymph, in some unexplainable way, deposits its fat in the deeper layers of intima.

Branson and Michels and Weber have added new cases to the already extensive literature on endarteritis obliterans. The cases reported were among Polish Jews working in tobacco factories, and themselves heavy cigarette smokers. The authors rise the question, whether in these cases tobacco was the causative agent. Lazarus Barlow believes, that such cases have much regenerated tissue in the intima, and showing no signs of calcification, are of syphilitic origin. This is, however, too sweeping a statement, as syphilis can be ruled out in many. As to the origin of the newly proliferated tissue the controversy still exists, whether it consists of endothelial cells or connective tissue. Baumgarten is a strong supporter of the former theory.

The views on syphilitic arteritis have not been changed from those enunciated by Chiari. The lesions are primarily a mesarteritis following the smaller blood vessels, with a secondary endarteritis that seldom calcifies.

As to the treatment of arteriosclerosis, Professor Romberg points out that digitalis seems still to hold the highest rank, and is favourably given in cases where there is not actual or threatened hæmorrhage, Sawada, however shows that in cases of arteriosclerosis with involvement of the kidney the arterial tension is not high, and digitalis may be given in small doses with good results. Groedel's method of giving a couple grains of freshly powdered digitalis leaves once or twice a day is particularly recommended. When cardiac weakness from coronary sclerosis is combined with abdominal plethora the arterial pressure is often raised. In such cases active purgation is valuable. For the general treatment of arteriosclerosis the best medicinal remedy is potassium iodide. This does not, according to Professor Romberg, reduce blood pressure, nor has it a direct action upon the pathological process. He believes on the ground of Mueller and Inanda's experiments, that it reduces the viscosity of the blood and so lessens the work to be done in the vascular system. It is not to be given when there is œdema of the lungs, or when arteriosclerosis is complicated by Graves disease.

Of great importance is the regulation of the patient's habits. Arterio-

sclerosis is regarded by Marchand as a nutritional affection of the vessel wall resulting from wear and tear. It is therefore essential that any source of added strain upon the vascular system be avoided. Sleep is also added as an important necessity and hypnotics may be indicated for three or four consecutive nights until natural repose is established.

With regard to diet, Romberg treats each case individually according to the state of nutrition and condition of the alimentary canal.

O. K.

PROF. HANS MEYER. "The Theory of Narcosis." *Journal A. M. A.*, January 20th, 1906.

In the first lecture of the Harvey Society course, Prof. Hans Meyer, of Vienna, advances a theory of narcosis which he states as follows: "The narcotizing substance enters into a loose physico-chemical combination with the vitally important lipoids of the cell, perhaps with the lecithin, and in so doing changes their normal relationship to the other cell constituents, through which an inhibition of the entire cell chemism occurs. It also becomes evident that the narcosis immediately disappears as soon as the loose, reversible, tension combination dependent on the solution breaks up. It follows, further, that substances chemically indifferent, as the volatile saturated hydrocarbons, can act as narcotics." It is the distribution relationship, the so-called distribution coefficient, of the narcotics between fatty and watery solutions that is the determining factor of narcotic action, and with the increase in this distribution coefficient there is an almost parallel increase in the narcotic strength, that is, decrease in the molecular concentration necessary for narcosis, as he shows by a table deduced from experience with a number of well-known narcotics. The apparent exceptions to the general rule are readily explainable by the naturally inexact methods of estimation or narcotic power. As all living cells contain lecithin, a lipoid body, this theory explains why all cells capable of stimulation are depressed by these narcotic substances. Narcotic drugs are complex substances and, therefore, that some of them produce other effects, sometimes even masking their narcotic action, is not remarkable. It is not attempted, moreover, to explain every type of narcosis by this theory. It is probable that other disturbances in chemical equilibrium may occur to inhibit the function of the cell, and that substances, such as morphin, are narcotic otherwise than through the "alcohol lipoids," and the same may be true of the very remarkable narcosis from magnesium salts, lately discovered by Meltzer.

W. T. COUNCILMAN "The Pathology of the Kidney." *Journal A. M. A.*, January 13th, 1906.

Dr. Councilman notices the complex structure and circulation in the kidney, its excessive blood supply, its marked capacity for repair with slight capacity for complete regeneration of tissue, and the steady impairment of its structure with advancing age, due not only to arterial disease and wearing out, but also to the cumulative effect of slight lesions with constantly increasing inability to repair. The most easily understood kidney lesions are focal ones from bacterial invasion, either by way of the blood or through the urinary tract. Chronic congestion and urinary obstruction may also cause damage through pressure and interference with the circulation. How the damage constantly accompanying diffuse arteriosclerosis is produced is not known. The changes consist in the destruction and degeneration of the parenchyma and increase of interstitial tissue, the latter being now generally accepted as secondary to the former. There is no evidence of an independent increase of connective tissue in arteriosclerosis. It is probable that the condition in the kidneys is the result of many factors rather than of any one. The greatest difficulty in understanding the pathology of the kidney is found in the acute, subacute and chronic diffuse lesions not connected with changes in the flow of blood or urine, nor with the immediate action of bacteria. Among these are noticed the acute interstitial non-suppurative nephritis due to the disposition and proliferation in the renal interstitial tissue of lymphoid cells from the bone marrow, spleen, etc., which occurs in acute infectious diseases, notably in the acute exanthemata. Why these cells accumulate in the renal veins is not known. Epithelial degeneration in varying character and degree is the most frequent condition met with in all cases of diffuse nephritis, often exquisitely focal and sometimes remarkably selective. Thus, in diabetes, it only affects the cells of Henle's loops. The degeneration may range from very slight change to complete necrosis. Of the severer lesions of the kidney due to the diffuse action of soluble substances, Councilman notes one group in which glomerular lesions are most prominent. The most common cause of the glomerular affections, he believes to be the acute infections. They may be acute, subacute or chronic. The other form of chronic nephritis, chronic interstitial nephritis, causing a slow destruction of all parts of the kidney, the glomeruli least and secondarily, with a marked increase of connective tissue, is usually accompanied by arteriosclerosis. It is a composite disease: not one organ, but many are affected. In this connection he gives the results

of the anatomic study of the autopsies in cases of nephritis at the Boston City Hospital during the past ten years, and notices especially the marked heart enlargement in this form. The cases of amyloid infiltration are closely associated with it, but there is absence of heart hypertrophy. In the cases of chronic glomerular (parenchymatous) nephritis there also appeared to be some of cardiac hypertrophy, though to a less degree. The frequent association of acute glomerular nephritis with pneumococcal infection is remarked, as also that of the acute interstitial form with diphtheria. Certain conclusions are forced on one, he says, by the careful examination of the kidneys in a large number of more general morbid conditions. Kidney diseases can not be considered as an entity; even the simplest bacterial lesions are secondary to infections elsewhere. Every acute infection probably leaves its traces in the kidney. Albumin and casts, though they mean injury to the organ, do not always indicate the severity of the condition, and too much importance may be attached to their occurrence. It is difficult to explain the association of lesions shown at autopsies, the cardiac hypertrophy and oedema, and the numerous hypotheses that have been offered show our ignorance. It is not probable that anatomic studies can throw much light on the obscure problems of renal pathology. Clinical, pathologic, chemical and anatomic methods must all be used, and the hypotheses offered tested by animal experiments. Only thus, and by reducing the questions to their simplest components, can such knowledge of chronic diseases as will permit us to form acceptable hypotheses for their explanation be obtained.

At a meeting of the Saskatchewan Medical Association held at Saskatoon, on March 15th, 1906, it was moved by Dr. Seymour, seconded by Dr. Kemp, and carried unanimously: That the Secretary of this Association be instructed to memorialize the Dominion Government as to the necessity of taking immediate and definite action with regard to the treatment and prevention of tuberculosis among the Indians on reserves and in the Industrial and other schools in this Province by the establishment of sanatoria in the vicinity of Indian Reserves. Attention is directed to the amount of tuberculosis existing among the Indian children attending schools and the necessity of removing infected children to sanatoria where they may be treated separately, and be no longer a source of transmitting the disease to others, and also that cases of tuberculosis occurring among adults and others not in the schools may be properly isolated and treated.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The eleventh regular meeting of the Society was held March 2nd, 1906, Dr. F. R. England, President, in the Chair.

SPLENECTOMY.

A. E. GARROW, M.D., presented before the Society a living case of wandering spleen, and gave the following history. The patient, a Greek, aged 32, female, had malaria fifteen years ago, and five years ago commenced to complain of pain in the left hypochondrium, since which time she has been practically more or less invalided. The patient was referred to the gynæcological department of the Royal Victoria Hospital with a tumour which was supposed to be pelvic. Dr. Chipman, however, recognized the spleen, and by posturing, the organ could be made to glide into various parts of the abdomen. Operation was undertaken some weeks ago. A few adhesions were found to connect the organ with the small intestines and also with the parietal peritoneum. There was a large and firm adhesion, chiefly from the omentum, covering the inner surface as a sort of sheath over the true pedicle which was very much enlarged, containing many enormously distended vessels. The organ, after being delivered through the incision, was readily removed by first tying off the omentum and afterwards ligating the pedicle. Since the operation convalescence has been uneventful, with the exception of two or three slight attacks of pain felt in the left hypochondrium and also referred to the epigastrium, which were not associated with any rise in temperature except in one instance. Rest in bed was sufficient to relieve this symptom. The most striking feature since operation is the marked change in colour; she was dark and swarthy, but since the operation the colour has improved steadily. She is now practically white, with the exception of one or two spots which still remain on the forehead. With regard to the blood count, before entering the ward it was as follows, red cells, 2,500,000, hæmoglobin 35 per cent., white cells 4,200. Just before operation the count was, red cells 3,150,000, hæmoglobin 40 per cent., white cells 4,000. After the operation, red cells were 3,000,000, hæmoglobin was 40 per cent., white cells 20,000. A marked leucocytosis followed the operation. At present the blood count shows 4,000,000 red cells, hæmoglobin 80 per cent., white cells 12,000. A differential count made to-day shows 60 per cent. polymorphonuclear cells, 35 per cent. lymphocytes, five per cent. large mononuclears; no eosinophiles, and no poikilocytosis.

F. G. FINLEY, M.D.—I would like to ask Dr. Garrow if he could give us any opinion as to the probable cause of the splenic enlargement; whether it may be possibly a case of splenic anæmia, as the improvement in the character of the blood after operation may suggest, or had the malaria anything to do with it, or was there any pathological condition present to account for the condition?

C. B. KEENAN, M.D.—As far as could be made out from the sections of the organ there were no changes suggestive of splenic anæmia or any malignant disease. The sections, however, showed slight fibrosis, but this was of the ordinary type and did not show any replacement of the spleen pulp by the endothelial type of cell which may be found in splenic anæmia. Scrapings from the spleen did not show any malarial organisms. One cannot from the sections, I think, give any opinion as to the origin of the cause of the enlargement. The pathological specimens show nothing very especial, only a couple of infarcts, one very old and one more recent.

A. R. PENNOYER, M.D.—I would like to ask Dr. Garrow's own feeling with regard to the ultimate prognosis.

A. E. GARROW, M.D.—As to the prognosis in this case, I would merely point to the patient to indicate the marked improvement which has taken place since the operation. She is free from abdominal distress, and apparently is enjoying herself much more than formerly, when she was practically an invalid; but as to the future blood changes which may develop we have only the experience of other and older cases, where the continuous improvement in the patient's general condition has been permanent. I think this has been well established, except, of course, in connexion with splenic anæmias.

RUPTURED AORTIC ANEURYSM.

KENNETH CAMERON, M.D.—There are many points of interest about the history of the patient from whom the specimen which Dr. Gillies will show you was taken. The man had reached an age, 77 years, at which it is unusual to find an aneurysm, he presented but few symptoms that would draw one's attention to his serious lesion, and his death was so tragic that I trust none of you will ever be situated as I was at the time. The old man had always enjoyed good health and had managed and worked a farm in Manitoba until within two years of his death. I saw him, for the first time, in June, 1904, when he was suffering from severe pain in the back, which he attributed to having been thrown out of a carriage about two months before. The pain was located on the left side over the angle of the scapula and

radiated to the precordial region. It was usually worse at night and after exertion. The precordial pain was always increased after taking food, and was associated with flatulence and constipation. In the examination of the chest there was nothing that attracted my attention to the actual conditions of affairs. A mixture of bicarbonate of soda and nux vomica gave complete relief to all the symptoms.

In October, 1905, during a long and fatiguing journey, he suffered from severe diarrhoea, but there was no pain in the back.

In February last, the old pain had returned, and had been very bad for several days when I saw him. The point of maximum intensity seemed to be higher up than before, along the spine and upper border of the scapula. The pain would shoot down the arm and around to the precordial region. The same gastric symptoms were present, but were more severe. Examination again failed to draw my attention to his lesion, there was no dysphagia, and the pupils were equal. I gave him morphia and hyoscine, hypodermically, which afforded him a comfortable night's rest. I may say that before giving him the drug, I had felt the left pulse and found it almost imperceptible. After he had gone to sleep I felt the right radial pulse and found it of good volume, which I attributed to the rest and relief from pain. Next day he was fairly comfortable, and asked for the mixture that had helped him before. Unfortunately for him one of the members of his household had been completely relieved of symptoms referable to the stomach by gastric lavage, and both he and his relatives seemed to wish that that method of treatment should be tried. I inserted the tube nearly a foot without any difficulty, when it would go no further. I withdrew it and tried again, when a gush of blood of about eight or ten ounces, came from his mouth. The patient got up and walked across the room, crying out with intense pain in the left side, and then collapsed. There was complete stoppage of respiration, though the heart kept on beating for fully five minutes, during which time artificial respiration was performed.

OSTEOMYELITIS.

A. E. GARROW, M.D., read a paper on this subject having special reference to the treatment of the condition. This paper appears on p. 246 of this number. In connexion with the paper Dr. Garrow presented a living case of a boy who had suffered from acute infective osteomyelitis which was multiple, beginning as a case of mastoid disease and followed by the formation of an abscess in the tibia, as well as the formation of pus in the os calcis. The case was operated

upon within eight or ten days after the onset of the disease when the bone was opened, trephined and the cavity scraped thoroughly, disinfected and an attempt made to secure healing by packing the cavity with gauze. Reinfection occurred, and the cavity was reopened, filled with the iodoform preparation and closed without drainage. Healing took place within ten or twelve days and has remained permanent since a period of almost three years. The treatment which was successful in the heel was simply curetting and packing with gauze.

F. J. SHEPHERD, M.D.—I would like to congratulate Dr. Garrow on his exhaustive paper on this subject. Of especial interest is the history he gives us in regard to this osteomyelitis; years ago we all thought that the infection was from without and not from within, as it is now known to be. I have seen not a few cases where the diaphysis of the bone has come away; in one case the tibia, and in another the radius, and in still another the whole lower jaw. In these cases the epiphyses are not affected. With regard to treatment advocated by Dr. Garrow, this has been tried pretty much all over the world since Mosetig's paper came out. He applied his treatment more to the joints than to cavities in bone. In this connexion I have thought we have been very long in learning lessons from the dentists, the filling of cavities by the different amalgams after getting rid of the diseased bone, is a pretty old method, and is said to have been used in ancient Egypt. I have not seen anywhere the success which Professor Mosetig has had in his cases. In most of the cases I have seen success only followed several trials. It is a very difficult thing to disinfect a bone cavity. Dr. Garrow's paper is a very instructive one, and I beg to congratulate him on having so clearly explained the whole subject.

SUBACUTE BLEPHARO-CONJUNCTIVITIS.

FRED. T. TOOKE, M.D., read a paper upon this subject.

W. G. M. BYERS, M.D.—I would like to congratulate Dr. Tooke on his comprehensive treatment of this now well recognized clinical entity. I prophesy that the contribution, which is distinctly needed in English, will be most favourably received by ophthalmological workers.

W. H. MATHEWSON, M.D.—I also would like to congratulate Dr. Tooke, and to point out that this is one of the now rapidly growing number of diseases a bacteriological examination of which gives the clue to treatment. These cases clearing up so rapidly under zinc, especially where there is an ulcer, very probably save the eyesight in a large number of cases.

HYSTERICAL SWELLING OF HAND.

A. H. GORDON, M.D.—This case report will be found in the May number.

A. E. GARROW, M.D.—I would like to ask what Dr. Gordon understands by hysterical swelling. He speaks of a much enlarged hand, but apparently eliminates lymphatic œdema. Was this of the nature of the so-called angiotic œdema often present in such patients, or not?

A. H. GORDON, M.D.—So far as descriptions go of this condition known as angio-neurotic œdema, it is associated frequently with urticarial attacks and also with gastro-intestinal disturbances, and not always associated with a definite history of hysteria. As to what the actual pathological condition is, it seems to me an extremely difficult question to answer. The fact that there is no pitting on pressure would exclude any effusion outside the lymph or blood vessels, and the fact that the limb is cold would, it seems to me, indicate that it is not an arterial hyperæmia, so the only possibility left is that it is a paresis of either the terminal venous radicles or of the lymphatic vessels with the fluid remaining in them. It is the only explanation that occurs to me under the circumstances.

The twelfth regular meeting of the Society was held Friday evening, the 16th of March, 1906, Dr. F. R. England, President, in the Chair.

The paper of the evening was read by J. L. Todd M.D., a graduate of McGill, Class of 1900, who had just returned from a two years' sojourn in the Congo, where he had been investigating the Sleeping Sickness prevalent in that region, for the Liverpool School of Tropical Medicine.

Dr. Todd illustrated his address by the use of lantern slides, and microscopical specimens of the trypanosome. Dr. Dutton, who was associated with Dr. Todd in his researches, discovered in 1901 for the first time a trypanosome in the blood of a European on the Gambia. In 1902 several cases in Europeans had been reported from the Congo Free State, and the Liverpool School of Tropical Medicine took up the study. The district traversed by the Commission covered an area of one-third the size of the United States.

In all 6,500 natives were examined, whose glands showed signs of enlargement other than that due to known causes. The glands of early trypanosomiasis are enlarged and in their secretion trypanosomes are usually found.

F. J. SHEPHERD, M.D.—In moving a vote of thanks to the reader

of the paper, Dr. Shepherd congratulated Dr. Todd on his excellent and instructive lecture.

JAMES PERRIGO, M.D., seconded the motion, and in doing so also expressed his appreciation of the facts brought forward by the lecturer, especially the pictures presented which, he said, were a perfect clinical picture of the disease.

A. LAPHORN SMITH, M.D.—I would like to ask Dr. Todd what precautions he took to preserve his own health; what his colleague, Dr. Dutton, died of, and if the disease can be acquired in any other way except by the tsetse fly; also if there is any hope of exterminating the pest, such as is being done with the mosquito.

H. A. LAFLEUR, M.D.—When one listens to a discourse such as this, and sees pictures which illustrate all conditions of things in the research, it is hardly possible to realize the appalling amount of work which such an exhibition as given to-night must mean. And with it all we remember that Dr. Todd is a graduate of a Canadian University.

J. L. TODD, M.D.—In the first place, as to how to keep one's health. The Liverpool School of Tropical Medicine was instituted, with just this purpose in view, to teach natives in these countries and others living therein so to place themselves and their surroundings in a hygienic atmosphere. The measures for the prevention of malaria may, properly speaking, be divided into two—the public measures, the filling up of marshes, drains,—and the personal measures, the careful and incessant use of mosquito netting, and quinine after exposure. The mosquito which gives malaria bites only after nightfall, therefore, during the daytime no particular care is necessary; but at nightfall all precautions should be taken, such as the wearing of high boots. These insects are shy, and are disturbed by the least movement, hence they bite when one is sitting or standing still. At dinner we wore long bathrobes of a double thickness, and generally retired about 9 o'clock. About 100 per cent. of the children under 10 are infected with malaria, and are the ever present foci of infection. With regard to the use of quinine, one should avoid it as much as possible; but when there is evidence of contact it should be taken every third, fifth, seventh and ninth day, in from five to six grain doses. In not one of the many expeditions that our school has sent out has there been a case of malaria. I have been with the school three years, and it has been carrying out these expeditions for ten years. We always boil the water—filters are no good—and if this is properly carried out there is absolutely no danger from anything. As for a means of exterminating the fly I do not think it would be possible to advise any means

of exterminating it. With the mosquito water must be present, but in this case the larvæ are deposited on the ground, are viviparous, and crawl, perhaps for two hours, until they reach a clump of grass or stone where they hide and turn into pupæ, which develop in about six weeks. One larva is deposited at a time as a rule. Dr. Dutton died as the result of tick fever. He had a very severe attack of the disease while we were at Kasongo which left him extremely weak, and, instead of resting, he kept on with his work, sometimes from six in the morning till all hours at night. He had quite recovered from the fever, but the nervous breakdown which followed was altogether too much for him.

SASKATCHEWAN MEDICAL SOCIETY.

The physicians of Saskatchewan met in Saskatoon on March 14th, 1906. They organized a provincial medical association and decided to apply to the provincial legislature for legislation regarding medical regulations and the qualification and examinations of candidates for the profession.

Among those present were A. B. Stewart, M.D., Rosthern; G. A. Charlton, M.D., Regina; E. M. Spence, M.D., Prince Albert; J. D. Lafferty, M.D., Calgary; J. W. Kemp, M.D., Indian Head; A. C. McKean, M.D., Rouleau; A. W. Allingham, M. D., Broadview; M. M. Seymour, M.D., Regina; H. E. Nibblet, M.D., Abercrombie; W. Henderson, M.D., South Qu'Appelle; A. J. Dixon, M.D., and G. R. Peterson, M.D., H. D. Weaver, M.D., W. J. McDay, M.D., J. A. Valens M.D., of Saskatoon; J. E. Bromley, M.D., H. E. Monroe, M.D., P. D. Stewart, M.D., S. Dickey, M.D.

The officers elected for the ensuing year were as follows: Hon. president, M. M. Seymour, M.D., Regina; president, J. W. Kemp, M.D., Indian Head; first vice-president, T. C. Spence, Prince Albert; second vice-president, H. Eaglesham, M.D., Weyburn; secretary-treasurer, G. A. Stewart; A. W. Allingham, M.D., Broadview; C. M. Henry, M.D., Yorkton. Standing committees were elected for a term of years as follows: Committee on credentials—W. J. McKay, M.D., Saskatoon; W. R. Sparling, M.D., Battleford; A. R. Turnbull, M.D., Moose Jaw. Committee on public health, etc.—A. C. McKean, M.D., Rouleau; P. D. Stewart, M.D., Saskatoon; J. D. Connell, M.D., Indian Head. Committee on legislation, two to be elected annually—H. E. Monroe, M.D., Saskatoon; H. E. Nybblet, M.D., Abercrombie; W. Henderson, M.D.,

South Qu'Appelle; D. Low, M.D., Regina; J. R. Bird, M.D., White-wood; A. W. Allingham, M.D., Broadview. Committee on publication—W. Elliott, M.D., M.L.A., Wolseley; A. G. Denmark, M.D., Langenburg; R. G. Stephenson, M.D., Moosomin. Committee on by-laws—J. A. Deyell, M.D., Alameda; A. S. Shadd, M.D., Melfort; T. A. Patrick, M.D., Yorkton. Committee on ethics—G. R. Peterson, M.D., Saskatoon; A. S. McKean, Rouleau; D. R. Davis, M.D., Estevan.

A constitution and by-laws were adopted. Several papers were read by Drs. Seymour, Charlton, Henderson and others. A resolution by Dr. Seymour of Regina, seconded by Dr. Spence, of Prince Albert, was adopted and the association will memorialize the Provincial Government to take steps for the establishment of a sanitarium for the care of tuberculosis patients and to enact regulations for the prevention of tuberculosis contagion.

Dr. Kemp, of Indian Head, seconded by Dr. Seymour, of Regina, introduced a resolution asking that the provincial government empower municipalities to issue debentures for the establishment of hospitals at the principal places in the province and further to amend the present hospital act. This motion met with the approval of the convention.

Dr. Lafferty, of Calgary, said an agreement had been reached by which the \$28,053 belonging to the old Territorial Medical Council was to be divided equally between the medical councils of Alberta and Saskatchewan. The councils would seek legislation in both provinces, to have a medical act passed suitable to present conditions. During the past year 343 men had registered with the Territorial Medical Council.

HAMILTON MEDICAL SOCIETY.

The regular monthly meeting of the Hamilton Medical Society was held on Wednesday Evening, March, 7th.

PROGRAM.

- 1—Pathological Specimens, Dr. I. Olmsted, Dr. D. G. Storms.
- 2—Some Mastoid Cases with Complications, Dr. W. Crawford.
- 3—Duke's Fourth Disease, Dr. James Ross.
- 4—Acute Articular Rheumatism, Dr. G. S. Glasco.

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No. 5.

THE "NEW LEARNING" IN THE QUESTION OF IMMUNITY
AND ITS PRACTICAL BEARING ON DIAGNOSIS
AND TREATMENT.

BY

A. G. NICHOLLS, M.A., M.D.

WRIGHT AND DOUGLAS. "An Experimental Investigation of the Role of the Blood Fluids in connection with Phagocytosis." Proc. Royal Soc., 1903, LXX.

WRIGHT AND DOUGLAS. "Further observations on the Role of the Blood Fluids in connection with Phagocytosis." Proc. Royal Soc., 1904, LXXIII.

WRIGHT AND DOUGLAS. "On the action exerted upon the Staphylococcus Pyogenes by Human Blood, and on the Elaboration of Protective Substances in the Human Organism in Response to Inoculations of a Staphylococcus Vaccine." Proc. Royal Soc., 1904, LXXIV.

WRIGHT AND DOUGLAS. "On the Action exerted upon the Tubercle Bacillus by Human Blood Fluids, and on the Elaboration of Protective Elements in the Human Organism in Response to Inoculations of a Tubercle Vaccine." Proc. Royal Soc., LXXIV.

HEKTOEN AND RUEDIGER. "Studies in Phagocytosis, Journ. Infect. Diseases." Jan. 12, 1905.

URWICK. "Observations on the Opsonic Power of People suffering from Tuberculosis." Brit. Med. Journ., July 22, 1905, p. 172.

DEAN. "An Experimental Enquiry into the nature of the Substance in Serum which influences Phagocytosis." Proc. Royal Soc., 1905, LXXVI, Series B.

WRIGHT AND REID. "On the Possibility of determining the Presence or absence of Tubercular Infection by the Examination of a Patient's Blood and Tissue Fluids." Proc. Royal Soc., 1906, LXXVII, Series B.

In the above-mentioned contributions we have the most noteworthy recent contributions to our knowledge of the greatly vexed question of immunity. For nearly two decades this subject has been to the fore and has been the occasion of a wordy warfare between experimental pathologists the world over. It would take us too far afield to discuss the merits of this conflict in any detail, but it is necessary for the proper understanding of what is to follow to pass in review the facts as they are accepted to-day.

In regard to the manner in which the animal organism protects itself against the ravages of pathogenic micro-organisms which may be introduced within it, experimentalists have been divided into two camps. Metschnikoff is the apostle of the doctrine of phagocytosis, which attributes the cure of infective disease and the production of immunity to the activities of special cells—phagocytes—which include particularly certain leucocytes of the blood, the splenic corpuscles, and the lining or endothelial cells of blood—and lymph-channels and serous sacs. The phenomena of phagocytosis are directly dependent upon the attraction (positive chemiotaxis) existing between these cells and the products of bacterial metabolism. In the opinion of this eminent pathologist and his pupils, phagocytosis is the all important factor in the struggle of the body against infective disease.

Opposed to this view is that of the "Humoralists." The work of Traube, Von Fedor, Pfeiffer, and Nuttall, among others, goes to shew that certain protective substances are contained in the serum and plasma of the blood, which have the power of destroying infective micro-organisms. From this point of view, without denying the fact of phagocytosis, the struggle against infection may be regarded as a sort of scavenging process, the phagocytes taking up and digesting micro-organisms that have been killed or injured by other means. Flugge has graphically illustrated this conception by comparing the phagocytes to the trenches made ready behind the fighting line to receive the conquered dead.

It might at first sight be thought that these two views are incompatible but a little reflection will shew that this is not necessarily so. It is conceivable for example that the bactericidal substances present in the serum or plasma are produced by certain cells, and, therefore, the humoral theory may be merely a corollary of the cellular. More searching experiments would seem to bear this out. Long ago, Hankin proved that the leucocytes of immune animals contain bactericidal substances, and the more recent researches of Buchner, Vaughan, Denys and Havel, and Ribbert, seem to prove that the bactericidal power of blood serum is

due to substances derived from the leucocytes. As the matter stands to-day, it may be said that practically all pathologists are agreed on the great importance of phagocytosis in the reaction of the organism against infective disease. Metschnikoff on his part is constrained to admit that there is an extracellular as well as an intracellular activity brought into play. The points in debate now seem to be the relative importance of this intra—and extracellular activity and various questions in regard to the details of the process by which immunity is brought about.

The process of immunity has been aptly compared to a combat, the micro-organisms damaging the tissues by means of toxic products of their metabolism, the invaded organism in its turn endeavoring to protect itself against the microbe by the elaboration of various defensive mechanisms. If we consider but for a moment the character of the vital processes of the invader and the invaded, we can readily understand that the phenomena of infection and the reaction against infection must of necessity be highly complicated. From all we know of metabolism we may infer with some probability that the mechanism of defense consists in the production of protective substances, which entering the blood stream are in consequence carried to the remotest parts of the body. These protective substances can be demonstrated in the blood and are undoubtedly the result of some vital process on the part of the infected organism, though where they are formed is not as yet known with certainty. Farther, it seems to be generally admitted that Ehrlich's view is correct, that before bacterial intoxication can take place the toxin must enter into a chemical combination with some cellular element of the body. It is important to note in this connection that the chemical affinities in question vary considerably, certain toxins having a special predilection for attacking certain cells, while other cells will escape. Thus, the tetanus toxin and that of rabies have a marked tendency to attack the central nervous system: the diphtheria toxin attacks the peripheral nerves: the scarlatina toxin is apt to attack the secreting cells of the kidney, and so on. In order to emphasise this important peculiarity which the toxin has of turning to some class of cell, Wright has suggested the term "tropine" as a suitable designation for bodies of this kind. Adopting this terminology, we may call the protective substances elaborated in the organism to combat these deleterious substances "antitropines". Several types of antitropines are known at the present day, some capable of neutralizing the effects of bacterial tropines, others, the tropines of highly-organized plants, still others,

those of animal origin, such as snake-venom. After twenty years of research we are only now beginning to realize the importance of these antitropines and to apprehend to some extent the marvellous complexity of the protective forces of the body. We know, however, that there are different kinds of bacterial antitropines, for example, anti-toxins, agglutinins, precipitins, lysins, and opsonins, and, moreover, that these differ both quantitatively and qualitatively in special cases.

Antitoxins are substances that neutralize the effects of certain bacterial toxins, the best known being those of diphtheria, tetanus, and botulismus. In many diseases it has been found impossible to demonstrate the existence of antitoxin, or, at least, the amount present is so small that it is impossible to detect it.

Pfeiffer has shewn, also, that the protective powers of the immune sera in experimental cholera and typhoid are due to the presence of lysins, substances which bring about the dissolution of the typhoid bacillus and the cholera vibrio. Here, again, there are many affections in which the existence of lysins in the serum cannot be demonstrated. Moreover, before bacteriolysis occurs the bacteria are rendered motionless and gathered into groups. It used to be thought that this phenomenon of agglutination was a necessary part of bacteriolysis but this is now known not to be the case. A serum, for example, that is both agglutinative and bacteriolytic may be deprived of the latter property without damage to the former. Agglutinins are therefore different from lysins.

If an animal receive injections of the blood serum or tissue juices of a second animal, or of egg albumin, peptone, milk, whey, or urine, there develop in the animal injected substances (precipitins), which, when added to clear fluids containing traces of the substances injected, give rise to precipitation. These reactions are within certain limits specific and are valuable in medicolegal cases to detect blood, or semen, and are also of value in shewing the relationship existing between closely allied animal species.

After this preamble, we may proceed to unfold the nature of opsonins and to indicate their practical bearing on the diagnosis and treatment of infective disease, which is the main purpose of this resumé

The work of Wright and Douglas, published during the past two or three years, has thrown a flood of light on the abstruse subject of immunity production. These observers have proved conclusively that the blood-fluids play a most important role in connection with phagocytosis. By investigating the action of the serum and the leucocytes separately

and in conjunction upon bacteria, they have demonstrated that substances exist in the serum which in some way alter the microbes so as to render them an easy prey for the leucocytes. These substances they call "opsonins," from the word "opsono," I "cater for," "provide victuals for." Divesting their method of sundry technical details, it may be summed up as follows. Certain volumes of serum, bacterial emulsion, and leucocytes, previously washed in a half per cent. solution of sodium citrate in normal salt solution, are mixed together, placed in the incubator for fifteen minutes at 37° centigrade. A film is made from this on a glass slide, stained by the modified Romanoffsky method, and the number of bacteria ingested by the leucocytes is determined. The bacteria contained within twenty leucocytes are counted and an average struck per leucocyte. The authors find that the leucocytes have no power to engulf bacteria unless the latter have previously been sensitized by contact with blood serum. Conversely, serum loses its sensitizing power if it be heated to 60° to 65° for 15 minutes. Clearly, then, the serum contains some substance of fundamental importance in determining the fact of phagocytosis. These substances, opsonins, are destroyed by heat, are thermolabile as it is called, and, moreover, act, as Wright and Douglas hold, by effecting some change in the bacteria and not by directly stimulating the activity of the phagocytes. These observations of Wright and Douglas are a technically beautiful and eminently scientific piece of work, and their contention as to the existence of opsonins has been amply confirmed by subsequent investigators, notably Bulloch and Atkin, Hektoen and Ruediger, and Dean. In the case of the sera of animals immunized against certain infections, it has farther been shewn that opsonins are present in the blood in increased amounts, and, moreover, as a result of the inoculation of bacterial toxins the opsonic powers of the blood may be increased.

It would be interesting to know, as tending to elucidate the question whence the opsonins originate, if there be any relationship between leucocytosis, which is so common a feature of infective disease, and the opsonic content of the blood. Our knowledge at present is not sufficient to give a decided answer to this important question. The experiments of Bulloch and Ledingham on this point have failed to shew any constant relationship between these two factors. With certain drugs, such as sodium cinnamylicum and tallianine, which produce marked leucocytosis, no increase in opsonin could be made out. With the nuclein of yeast, however, they observed a notable increase in the opsonic content, often unassociated with leucocytosis. Huggard and Morland,

in the case of man, found that the internal administration of yeast produced an increased opsonin production as well as a marked leucocytosis.

As the matter now stands, practically all investigators are agreed as to the fact that the blood serum contains substances which are absolutely essential to phagocytosis, but some doubt still exists as to the nature of these opsonins of Wright and Douglas. Dean, for example, holds that opsonins are thermostable and are, therefore, to be identified with the specific immune body, "fixateur" or "substance sensibilisatrice," previously described by other observers, notably, Denys, Metschnikoff, Savtschenko, and Levaditi. Dean was able to make out from experiments both with normal and immune sera that the destruction by heating of the opsonin in both kinds of sera is only fractional and that its apparently complete disappearance is due to the method of observation employed, which demonstrates its presence only over a very short range. His observations, also, tend to confirm the idea that the opsonins of normal blood serum are the same as those of immune sera. The fact that normal sera contain an immune substance has, of course, been known for some time. The normal anti-toxin (e.g., of diphtheria) and anti-ferments need only be mentioned. The work of Pfeiffer, Bordet, Moxter, Ehrlich, and Morgenroth, has firmly established the fact that the bacteriolytic and hæmolytic actions of normal serum are due to the presence in the serum of an immune body plus a complement. With regard to opsonins, it is still undertermined whether free complement may take part in the preparation of the microbes, but Dean's work goes to shew that this at all events is not a necessary factor in the case.

In the light of these experiments we are in a position to appreciate more fully something of the nature of infection. When bacteria gain an entrance into the economy some of them are immediately sensitized by the serum and are engulfed by the phagocytes. The amount of the immune substance in the plasma is, however, small and the supply is soon exhausted. Consequently, the organisms that escape its action are able to multiply and are either indifferent to the phagocytes or exercise a repelling influence upon them in the absence of the naturally present immune substances.

Hektoen and Ruediger have shown that, like complements, opsonins may be neutralized or bound by various salt solutions. (CaCl_2 , BaCl_2 , SrCl_2 , MgCl_2 , K_2SO_4 , NaHCO_3 , $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7$, $\text{Na}_2\text{C}_2\text{O}_4$, $\text{K}_4\text{Fe}(\text{CN})_6$) and other substances, such as formalin, so that they cannot act on bacteria. They suggest that antiphagocytic action of this nature may be an important factor in the establishment and progress of various

infections, especially those caused by streptococci, pneumococci, and other microbes in the destruction of which phagocytosis is an important factor.

The importance of these researches on the opsonic content of the blood, apart from the light they throw on the obscure question of immunity production, lies in the fact that they afford us rational indications for the treatment of certain of the infectious diseases by the vaccine method, a method which, since Koch's initial work on tuberculin has fallen undeservedly, as it would seem, into disrepute, has been developed almost exclusively by Wright and his pupils in England.

The vaccine usually employed is a culture of the microbe which has been the cause of the infection. The culture is a suspension in salt solution, sterilized by heat at a temperature of 65°—70C°. Wright has emphasized the necessity of working quantitatively in this branch of therapeutics. For microbes like the staphylococcus, pneumococcus, and *b. typhi*. Wright determines the number of bacteria by mixing definite quantities of normal blood and the emulsion of the culture. A film is then made and stained. The proportion of bacteria to red corpuscles is determined by counting a number of microscopic fields and the bacteria are estimated on the basis that 1 c.cm. of blood contains 5,000 million red corpuscles. In the case of tubercle vaccine the new "bacillus emulsion" of Koch, which is standardized, is a very suitable agent to use.

As a necessary preliminary to treatment the opsonic content of the serum must be determined by the method already referred to. As a rule, this is stated as the "opsonic index." This opsonic index is the result obtained by dividing the number of bacteria taken up per leucocyte in the presence of any given serum by the number taken up per leucocyte in the presence of the serum of a normal individual. To take an example; If the number of staphylococci taken up per leucocyte in the presence of a given serum be 14 and the number taken up per leucocyte in the presence of a normal serum be 20, then 14 divided by 20 gives us 0.7 as the opsonic index of the serum in question. Of course, to obtain a reliable opsonic index it is necessary to know what variations, if any, occur in the opsonic content of the blood in healthy individuals, or at any rate in persons not infected by the particular microbe the phagocytic power against which is to be tested. It has been found by Bulloch and Urwick that in normal individuals the opsonic index lies between 0.8 and 1.2, with an average of 0.97, in the case of the tubercle bacillus, and the same is apparently true of the opsonic index for the staphylococcus.

Farther, the opsonic index in such persons does not vary from day to day and does not suffer deterioration for at least twelve hours after withdrawal from the body.

It is quite different when we come to consider the opsonic index in cases of infectious disease. Here variations from the normal may be considerable. Wright in his earlier experiments in the cases of localized staphylococcic and tubercular infection found the opsonic index to be below unity. Urwick, who examined 54 cases of tuberculosis, including lupus, pulmonary phthisis, and surgical tuberculosis, obtained a different result, to this extent, at least, that in many cases, especially of pulmonary tuberculosis, the index was above normal, the variations lying between 0.2 and 2.6. In 33 cases of phthisis the index was above 1 in 25 cases, below 1 in 7 cases, and was unity in 1 case. Bulloch investigated the opsonic index in 150 cases of lupus. Compared with an average index of 0.97 in healthy people the average in lupus cases was 0.75. In 25 cases of uncomplicated localized staphylococcic infection the index was below normal constantly. The inference to be drawn, with regard to tuberculosis especially, is that in lupus and glandular disease the opsonic index tends to be below the normal: in pulmonary tuberculosis the index is variable, but tends to be above the normal. The "lungers" with a low opsonic index are usually in a very advanced stage of the disease and have an exhausted resisting power. The meaning of these variations will be discussed when we come to consider the diagnostic and prognostic import of the test.

A point of great importance in regard to the interpretation of the results and as affording a reliable guide to the adoption of the remedial measures is this, namely, that the opsonic content of the blood in tuberculous patients varies within wide limits during the course of the disease. We can best understand this if we consider for a moment what occurs after the inoculation of a healthy organism with tuberculin. Wright and others have shewn that after the introduction of a bacterial vaccine, such as tuberculin, (1) There is, subsequent to inoculation, a negative phase during which the opsonic power is decreased: (2) This negative phase is succeeded by a positive phase during which the opsonic power is increased: (3) In the question of treatment, an inoculation is to be regarded as successful if the opsonic power be permanently increased. (4) The same phases occur after every inoculation, but the ultimate result depends upon the correct interspacing of appropriate doses of the vaccine. The effect of a second inoculation, given when the positive phase following the first inoculation is at its height will be to raise the

opsonic index to a still higher level, but the effect of a second inoculation, given during the negative phase will be to reduce still farther the opsonic power already reduced by the first inoculation. In both cases the effect of the inoculation is cumulative.

If we turn now from persons artificially inoculated to those who are inoculating themselves in the course of disease, we have evidence for believing that in a large number of cases the opsonic power follows a succession of positive and negative phases. It is difficult to interpret this phenomenon, as the factors that produce these variations appear to be very complicated, but it looks as if these varying phases of opsonic power are connected with the passage out into the blood at irregular intervals of tuberculin derived from some local focus of infection, or, in other words, a self vaccination. The practical conclusion to be drawn from all this is that, believing as I think we must that a high opsonic index is a sign of a certain amount of resisting power on the part of the patient, where the method of treatment by tuberculin injections is adopted, care should be taken to regulate the dosage and the time of administration so that the opsonic index is constantly kept at a high level, and that a negative phase should never be farther accentuated. This implies that frequent examinations of the opsonic index should be made in all cases under tuberculin treatment. Of course this is a great labour and, again, would likely be fallacious, save in skilled hands, yet it might be carried out in sanatoria where the proper conditions can usually be secured. It is often stated that a small dose of tuberculin given at intervals of seven to ten days is sufficient to give satisfactory results without examination of the opsonic power. This may be so, but it not infrequently happens that the negative phase after inoculation may last more than ten days and from clinical signs we get no evidence of this. If in such a case a second inoculation were given, evil rather than good would result. Where examinations cannot be properly and systematically made the best plan is perhaps to give a very small dose at first, the inoculation to be repeated in ten days, the future course to be pursued then depending on the patient's clinical condition. With regard to the important question of dosage. Vaccines are powerful agents and Wright and others have shewn that tubercular patients are extremely susceptible to their action. Consequently, they must be exhibited with great care and only the smallest dose employed that will produce the required effect.

A word or two also should be said in regard to the selection of patients for treatment by the tuberculin method. The most favourable cases are

those of surgical tuberculosis with a low opsonic power which can be increased by appropriate inoculation. In such we often get well-marked improvement. It is as yet doubtful to what extent patients with a high opsonic index will benefit from the treatment. Some may, but the treatment must be carried out with great circumspection, for a high opsonic index may herald the incidence of a negative phase, and an injection given at such a time may simply precipitate or accentuate the fall. Here, we can only test the matter, subsequently being guided by the clinical course of the case.

All this may appear to some to be somewhat speculative, but we may remark that, while experimentalists may theorize, in this case their theories are based on a fairly firm substratum of facts. The proof of the pudding is in the eating of it, and the value of any theory may be deduced from the manner in which it works out. Let us take, for example, Wright's first attempts at applying his views to therapeutics. He published 20 cases of furunculosis, sycosis, acne, most of a severe and intractable type. These he treated by inoculations of dead staphylococci, giving from 500 to 2,500 millions at a dose. His results have been strikingly good. Bulloch, too, treated 11 staphylomykoses by Wright's method, namely, 15 cases of facial acne, 4 of furunculosis, and 2 of sycosis. With the exception of one case of sycosis, all were chronic and had defied ordinary therapeutic measures, which had, moreover, been carried out with great thoroughness, as most of the patients were medical men or students. Of the 11 cases 9 have been completely cured or greatly improved. One case of boils and one of sycosis have shewn a great tendency to relapse and could not be regarded as cures. It is probable that the method of inoculation may eventually be extended to other fields of surgical practice, though as yet little has been done in this direction. Glover Lyon has recorded a case of pneumococcic empyæma, which, in spite of operation, did not do well, in so far that nine weeks after the resection of the rib there was considerable discharge. The inoculation of 100 millions of pneumococci at once gave rise to improvement and after two subsequent inoculations complete cure was brought about. Wright has, also, published the histories of a number of cases of localized tuberculosis treated by his method with Koch's new tuberculin, cases which had been regarded by the hospital clinics as incurable. The result has been to shew that the new tuberculin has marked healing properties, and, moreover, that minute doses often suffice to bring about a cure. In this field the future is distinctly hopeful.

The value of the character of the opsonic index in the diagnosis and prognosis of disease is still under discussion and a final answer on this

question cannot be given until more facts have accumulated. Wright and Reid hold that the measurement of the opsonic power of the blood is a valuable aid in the diagnosis of tubercular infection. They summarize their conclusions as follows:

(a) Where a series of measurements of the opsonic power of the blood reveals a persistently low opsonic power with respect to the tubercle bacillus, it may be inferred, in the case where there is evidence of a localized bacterial infection which suggests tuberculosis, that the infection in question is tubercular in character.

(b) Where repeated examination reveals a persistently normal opsonic power with respect to the tubercle bacillus, the diagnosis of tubercle may with probability be excluded.

(c) Where there is revealed by a series of blood examinations a constantly fluctuating opsonic index the presence of active tuberculosis may be inferred.

In the case where we have only at our disposal the result of an isolated blood examination we may conclude that

(a) Where an isolated blood examination reveals that the tuberculo-opsonic power of the blood is low, we may,—according as we have evidence of a localized bacterial infection or of constitutional disturbance—infer with probability that we are dealing with tuberculosis—in the former case with a localized tubercular infection, in the latter with an active systemic infection.

(b) Where an isolated blood examination reveals that the tuberculo-opsonic power of the blood is high, we may infer that we have to deal with a systemic tuberculous infection which is active or has recently been active.

(c) Where the tuberculo-opsonic power is found normal, or nearly normal, while there are symptoms which suggest tuberculosis, we are not warranted apart from the further test described below in arriving at a positive or a negative diagnosis.

The further test referred to consists in this: When a serum is found to retain in any considerable measure, after it has been heated to 60° C. for 10 minutes, its power of inciting phagocytosis we may conclude that "incitor elements" have been elaborated in the organism, either in response to auto-inoculations occurring spontaneously in the course of tubercular infection, or, as the case may be, under the artificial stimulus supplied by the inoculation of tubercle vaccine.

Further help is obtainable by comparing the opsonic power of the patient's blood with the tuberculo-opsonic power of the fluids derived

from the focus of infection. It has been shewn by Wright and Lamb and again by Wright and Douglas that in the actual focus of infection there is a lowered "bacteriotropic pressure" which accounts for the cultivation of the pathogenic microbe in the interior of the organism which has at its disposal in the circulating blood a considerable reserve of antibacterial substances. To illustrate;

A case of psoas abscess was taken and the blood from the patient's finger and the pus from the abscess were examined. The serum gave an opsonic index with a suspension of tubercle bacilli of 2.4 and with a suspension of staphylococci, 5.0. The fluid obtained from the pus by centrifugalization gave 1.23 and 1.2 in each case respectively. Here, the pus was impoverished in both tuberculo—and staphylo-opsonic substances as compared with the blood. This was taken to mean that there was a combined infection with tubercle bacilli and staphylococci. The inference, so far as it related to the staphylococcus was confirmed by getting cultures of the micro-organism from the pus.

Again, a case of ascites with grave constitutional disturbance in a man of 30. The tuberculo-opsonic index in the case of the blood was 1, in the case of the ascitic fluid was also 1. The inference was that the case was not tubercular. A post-mortem examination shewed the case to be one of miliary carcinoma.

The fact that the opsonic content of the fluid from a local focus of infection may differ from that of the blood serves to give us a hint why it is that these lesions if left alone do not readily heal. If an abscess be incised and evacuated, cure is brought about not so much by the removal of infective material as by the removal of tension. In abscesses or tubercular foci the vessels of the neighborhood, both blood vessels and lymphatics, are compressed and therefore the plasma with its antitropines cannot be brought into direct contact with the infecting micro-organisms. The lesion to all intents and purposes is extravascular. Incise it, relieve tension, and the circulation, is re-established, so that the opsonic power of the blood is in a position to exert its influence. In skilled hands, and taken in conjunction with the clinical signs, the determination of the opsonic index seems to be a valuable aid in diagnosis. The interpretation of the results obtained by this method of examination is, however, in some cases fraught with difficulty. Thus, in the case of tuberculosis, an abnormally low opsonic index may be obtained in localized disease in cases that are doing well and, again, in severe affections that are going from bad to worse. In the first instance, the low index might, perhaps, be explained on the assumption that such

persons have an inherently poor resisting power, a weakness of constitution, which probably accounts for their infection in the first place. This seems to be borne out to some extent by the fact that some of such patients give a very bad family history. A low opsonic index may, also persist long after the cure has been established. This phase of the subject is well worthy of further study. Or, again, it may mean that the immunizing machinery has become exhausted. Patients suffering from the pulmonary form of tuberculosis who have a low opsonic index usually do badly. An abnormally high index, while probably a sign of infection, is found both in cases that do well and in those that are hopeless, so that as a prognostic indication it is apt to be at fault. Probably, it is necessary to determine the variations at different periods before it will be possible to express any correct opinion as to the outcome of the case.

Altogether, the results of the investigation recorded here are most stimulating and encouraging. We see that, rightly used, the inoculation or vaccination method of treating infectious disease is a valuable addition to therapeutics and probably has come to stay. If employed, it should be employed early before the protective mechanisms have become exhausted and are unable to respond to the calls made upon them. It should prove a useful handmaid to the surgeon in whose domain most of the cases that afford hope of amelioration are at present found.

SURGICAL TREATMENT IN GENU VALGUM RECURVATUM PARALYTICUM.

BY

W. G. TURNER, M.D., M.R.C.S. (Eng.)

(Communicated from Breslau.)

Through the courtesy of Prof. Lange I am enabled to report the operation on a patient suffering from this condition, done while I was voluntary assistant in his clinic, as also the result in a case operated upon three or four years previously.

In both cases there was a paralytic condition of the foot; but the absolute disability of the patient resulted from the flail condition at the knee joint. In such paralytic cases the condition of recurvation usually indicates extensive paralytic involvement of the knee flexors, but at the same time preservation of the quadriceps either in toto or with good functional activity. In the cases in question there was also a valgus deformity which, to my mind, was primary to the

recurvation. The result of one case appears to justify this opinion. A strong quadriceps is opposed by weak or disabled flexors, especially on the inner side of the joint. The leg as a support progressively becomes weaker at the point of least resistance, the internal lateral ligament becomes lengthened, the valgus position more pronounced, combined with the recurvation from the action of the quadriceps. Thus the leg becomes useless as a weight-bearing support. The operation goes to the crucial point in the case of providing firm periarticular support at the weak point along with shortening of the weak muscles which helps to counter-balance the excessive action of the quadriceps. Once the condition at the knee joint allowed weight bearing, the correction of the foot to the plantigrade position gave good ground support. Naturally this good result could not be expected were it a pure recurvatum condition, the condition being one-sided, but these two cases demand from the surgeon a recognition of the locus minoris resistentiae, and if one be present, whether correction of the same will not give a certain percentage of good functional result. These do not in any way conflict with Prof. Lorenz's arguments as to the futility of transplanting portions of the quadriceps to act as knee flexors, or of operative interference in pure genu recurvatum (Lorenz, Meran address, January, 1906).

Certainly the result in the one case justifies the procedure, as four and a half years ago the child was quite unable to walk, and one week before my visit had walked 25 kilometres in the mountains without the help of any stick or apparatus.

Following are reports of the two cases:

Patient, æt 6, female. Poliomyelitis anterior æt. 2, and since then has been quite unable to stand or walk alone, and only with great difficulty when aided by apparatus and crutches. Family history not obtained. *Status præsens*: Patient somewhat anæmic. Nothing abnormal noted except extensive paralysis in both lower extremities, causing pes equinus valgus position of both feet (flaccid) and position of genu valgum recurvatum (flaccid) in both knee joints. Extremities cold, slightly cyanosed, as in most of these cases, and marked atrophy is also present.

Right leg shows paralysis of tibialis anticus and marked paresis of tibialis posticus. At knee marked paresis of flexors.

Left leg: Gastrocnemius the only muscle of the foot functioning. At the knee the same condition as in right leg.

Operation:—Right leg first operated upon—peroneus brevis was trans-

planted to the os naviculare, flexor digitorum united to tibialis posticus and both muscles shortened after the Lange method.

Knee—Incision from insertion of sartorius upwards about $4\frac{1}{2}$ inches. Sartorius determined and then the semi-tendinosus was isolated well up to the muscle belly. The semi-membranosus was then treated in the same manner and the postero-internal aspect of the joint capsule clearly defined. The knee was flexed to an angle of about 170° and held by an assistant. Strong silk was then employed to shorten the capsule, extending from a firm hold in the periosteum of the femur to the periosteum of the tibia, after which the semi-membranosus and tendinosus were shortened until they were quite taut. Wound was closed with subcutaneous drain and fixed by plaster of Paris in partially flexed position.

Left leg operated upon ten days later.

The same operation was performed at the knee: Shortening of the extensors of the foot brought it to a right angle, and the leg from hip to toes was then fixed in a plaster of Paris cast.

After-treatment consists in removing sutures in ten days and slightly extending the leg. This extension is repeated several times with fixation between *séances* until after three months the extremity is straightened. The foot is always fixed at right angles to the leg. After the third month the cast is removed and massage must be regularly practised for several months—combined with “active” muscular exercise and very gradual weight bearing.

I received a very satisfactory answer to my inquiry as to prognosis in a card to examine a patient operated upon four and a half years ago for the identical knee condition, the result of which I report:

Patient *æt.* 12 years. Anterior poliomyelitis at age of 2 years. Operation for the paralysis *æt.* $7\frac{1}{2}$ years. Otherwise has always been healthy.

The notes of the case before operation record marked paresis of the knee flexors and a condition of genu valgum recurvatum at the knee joint, also paralysis of the tibialis anticus, paresis of calf muscles and an equinus position of the foot. Both joints were very flaccid and unable to bear weight.

Operation:—The extensor hallucis was shortened and the foot deformity corrected. On the knee the same operation was performed as described above. No preliminary “modellirende redressement” was necessary.

Present Condition, four and a half years after operation: right extremity.

Foot—The position is plantigrade—no supination and little pronation. No plantar flexion, dorsal flexion to 45°.

Knee—Slight genu valgum. Flexion fairly performed, but weaker than extension.

Gait—Patient walks *unaided* with marked side limp, but has no difficulty and can readily *go up and down stairs*.

Marked atrophy of the entire extremity is present, including also the gluteal muscles. Movements are slightly better performed when the leg is warm. Compensatory scoliosis.

On attempting to elicit the Trendelenberg sign the very marked weakness of the right extremity was demonstrated.

Previous to operation, the parents stated, the child was quite disabled and a cripple, while one week previous to this examination she had walked *unaided* twenty-five kilometres during one day in the country.

HYSTERICAL SWELLING OF THE HAND.

BY

A. H. GORDON, M.D.

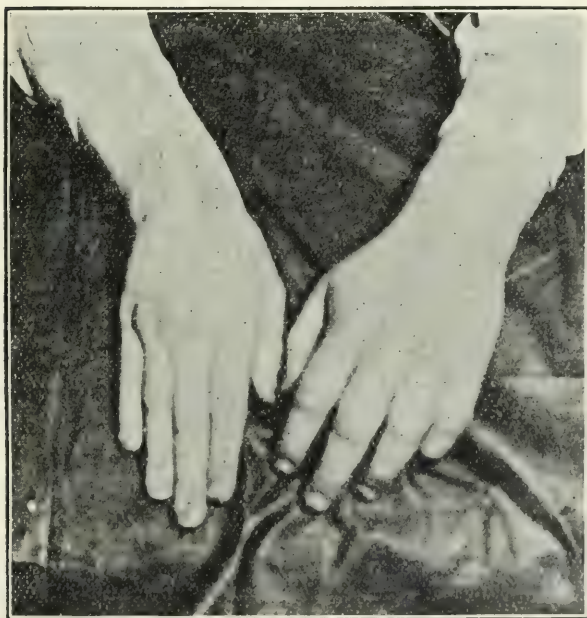
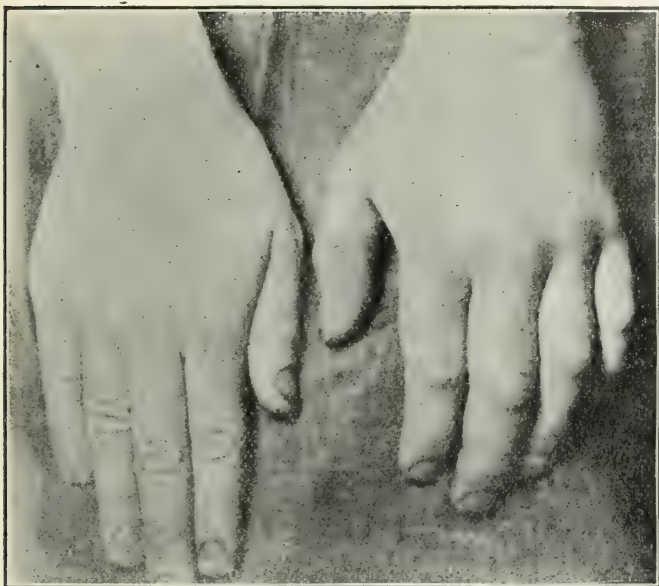
A. B., a young woman, 18 years of age; by occupation, a photographer's assistant, came to me on October 9th, 1905, complaining of swelling of left hand and slight pain and feeling of clumsiness.

On the morning of October 6th, when she woke up, the hand felt awkward, and that night somewhat painful. Next morning she noticed it swollen with some pain over the wrist extending up the forearm.

She had had no feverishness nor headache; no history of chill or vomiting, nor had the arm at any time felt hot.

Family history—No history of rheumatism or tuberculosis, but a very distinct neurotic heredity. The mother is distinctly neurotic, and a sufferer from arthritis deformans; one sister has suffered from major hysteria, having had at different times a hysterical hip joint, talipes, cataleptic attacks, epileptiform convulsions, retention of urine, hysterical vomiting, aphonia, and for several years has been completely anaesthetic to pain.

Present condition—A very well nourished girl, of good colour. Temperature, 98; pulse, 70; respirations, 24. The left hand, up to one inch above wrist joint, is tensely swollen, of a pearly bluish colour, distinctly colder than the right; no pitting on pressure, no spontaneous pain, but some tenderness on pressure over the wrist joint, and a con-



stant heavy feeling up the left arm. Fingers tense, nails of good colour.

Left hand, 24 c.m. in circumference; right, 20 c.m.

Motor power—Flexion, extension, adduction and abduction of hand at wrist almost absent. In same degree power of fingers is lost. With great difficulty picks up a pin or coin, while eyes are open, and cannot do so with eyes closed. Power of arm and forearm muscles good but weaker than right. Sensation of pain up to level of one inch above wrist joint. Heat and cold absent. Sense of touch, tested by cotton wool, absent up to same level.

With eyes closed is unable to perceive characters of objects placed in the hand.

Over the whole left side, as far as the mid-line, there is diminution of painful sensation.

Submammary and iliac tenderness. Distinct globus hystericus. Pharyngeal reflex present. Field of vision to rough test not diminished. Pupillary reflexes and knee jerks present. No visceral manifestations. No signs of venous or lymphatic obstruction in arm. All other organs are normal.

The arm was placed upon a splint and in three days the swelling diminished, and in a week had completely disappeared. With the disappearance of the swelling, the power of movement returned to the hand, and objectively sensation returned; touch appearing first, then heat, cold and pain. The patient had one slight attack of a similar character since.

At first on seeing the condition 't occurred to me that it might be due to an idiosyncrasy to some drug used in patient's occupation, but its limitation to the left hand, and its sharp demarcation by a line one inch above the wrist were against that.

Venous or lymphatic obstruction, I think, were excluded by the absence of any cause, and arterial blocking by the persistence of pulse in the wrist.

The absence of any febrile phenomena would exclude rheumatism or erysipelas.

A trophic affection from a localized neuritis would not explain the condition, as the distribution of both motor and sensory symptoms was not that of any one nerve.

Then the positive signs of hysteria elsewhere and the distinct neurotic heredity point very strongly to that explanation of the condition.

OUR CHILDREN AND TUBERCULOSIS.

BY

SIR JAMES GRANT, M.D., K.C.M.G.

Few subjects at present before the public, are worthy of more careful enquiry than the health of children, and their environment during the period of school life. Our cities are increasing rapidly in population, residences more in demand, and doubtless, in many instances, the commencement of overcrowding, such as experienced in the cities of New York, Boston and Philadelphia. Under such circumstances, there is need for increased work, along broader lines, to bring about practical results, as far as staying the progress of tuberculosis is concerned.

The systematic medical examination of school children in Canada, has been under consideration during the past year or two, but so far, has not reached any definite form. In the County borough of Blackburn, England, the recent report of Dr. Alfred Greenwood, medical officer of health, has attracted wide spread attention. Of 338 school children examined personally, no fewer than 54 were suffering from tuberculous diseases. It is a serious state of health, that out of 338 children taken at random for examination, 54 should have pulmonary consumption. Such statistics will doubtless prove a surprise to many. The fact that young children are generally not supposed to suffer from pulmonary tuberculosis may account for such states of the system being passed over in a casual manner. Most important points in the early discovery of lung disease are separation from children in health; careful inspection from time to time of those who have been exposed to the disease, and most thorough enquiry into the standard of living in the residences of those diagnosed as consumptives. At this stage of proceeding, what an important place the trained nurse occupies. The principle of isolation is fully set forth to the family in the house, for it is here that the disease is born and bred. The premises must be disinfected frequently and the patients instructed how to properly carry out such. In addition to hygienic measures, the food supply of the family frequently requires examination. If the parents are ill and sent to a sanatorium, the children require under such circumstances, special care and attention. These are a few of the points each local society has before it, and the success in such endeavours depends greatly on the careful watchfulness over minor details.

Systematic medical examination is truly the correct way of defining diseases of school children, and the important responsibility should not be expected of teachers unequal to such scientific medical duties.

The Canadian Association for the Prevention of Tuberculosis is exercising every influence in its power to combat this disease, and the Local Association as well, and yet the death rate in our midst is great in proportion to our population, and requires untiring energy and exertion, backed by the timely co-operation of a willing public, to arrive at such a record as will indicate satisfactory results. Committees on physical deterioration of the race are well enough in their way, but what we require at this stage of progress are true issues, along practical lines, based on common sense principles, vigorously carried into operation. Then and then only, can we hope for a marked reduction in the sad mortality experienced daily in the march of this disease.

It is only within a brief period that the transmission of this disease has attracted attention, and been thoroughly understood. There are to-day, two well-established principles: 1st, That tuberculosis is preventable, and 2nd, That tuberculosis is curable. The problem of the tuberculous is strictly speaking, one of prevention, and not of cure alone. To prevent tuberculosis we must get at the causes, and how are we to grapple with causes more directly than by the careful and searching investigation of the manifestation of tuberculosis in school children. Medical examination will materially aid the health education of the young nation of Canada, all of which in the opinion of the Deputy Registrar General of Ontario, should be considered by a special committee or commission, appointed by the Ontario Government for that purpose. Such is a move in the right direction of the most commendable character, and if carried out, is certain to lead to practical results. The prospect of long life depends greatly upon the manner in which life has been cared for, and protected in the stage of childhood. In this period, the very corner stones of future strength and constitutional development are placed, so as to build up and construct tissues, possessing the very elements of vitality. The medical examination of schools is well received in England by the Medical Department of "The Educational Committees of London County Council," and the "School Doctor" is an established institution in the land. In Europe also, as well as in the neighbouring Republic and Japan, there is a general consensus of opinion favouring this progressive move for the protection of child life and now fortunately extensively in practical operation. No form of educational organization can be considered complete which does not make provision for the systematic reference of the health of school children to medical experts, appointed for that purpose. This is, in fact, the only correct method

by which tuberculosis disease can be properly diagnosed and the requisite plan of action adopted to guard the life of the child and prevent communication of the disease to others. With the measures now in operation, it is not surprising the disease is still spreading, and the weekly record in our midst, unsatisfactory. All such points to the necessity for increased exertion in the line of inspection in both the school, and the home particularly, the very key to the prevention of tuberculosis, where as a rule *it is contracted by the child*. The opinion of the recent "Paris Tuberculosis Congress" favoured the idea that the question of healthy dwellings will always dominate the prevention of tuberculosis and declared strongly in favour of the view, that alcohol predisposes to tuberculosis, and aids the disease in the work of destruction. The present care of the child or the adult as far as sanatoria is concerned, is a difficult problem.

There are fully 8,000 consumptives in the Dominion and as to treatment, no adequate preparation. Each life valued at \$1,000 indicated a loss annually of fully \$8,000,000 with very feeble evidence towards lessening this sad and telling mortality.

Last session the subject of tuberculosis was ably presented by Hon. Mr. Edwards in the Senate and Mr. Geo. H. Perley, M.P., in the Commons, resulting in most favourable comments as to the necessity for action to lessen the death rate in our contry from the "White Plague."

A small grant has been received from the Dominion Government to assist in defraying the expenses of the Canadian Association for the Prevention of Tuberculosis. Beyond this no specific action has been taken, owing to the provisions of "The British North America Act" as to public health. The Ontario Government offers a grant of 40 per cent of the cost of all municipal sanatoria but no grant to exceed \$4,000.00. The counties of Perth, Oxford, Wellington and Waterloo applied to the Government for a grant to each county so that they could control \$316,000.00 toward the erection of a sanitorium for their joint use. This union of counties is a pratical idea and why should four counties in the valley of "The Ottawa" not do likewise. Such action, followed up by an appeal to the public for private assistance, would enlist sympathy and support, when, as at present, general interest is aroused as to the necessity of immediate action. It is impossible to provide at once for all those labouring under the disease. What is absolutely necessary is compulsory notification of such cases which in time would lead to a classification and greatly assist in the selection of

cases to which attention could be given as to immediate needs and requirements. Dr. Trudeau, of Saranac, favours the idea of having every community build its own sanatorium and receive support, pro rata, from the state or county, the best and most efficient plan from his point of view of combating the disease. The day for expensive and elaborate sanatoria is about over. As a commencement, the simple shack erected at the expense of a few hundred dollars each, will be found most useful and practical. Thoroughly competent medical attendants and nurses are what we require and not expensive structures to overburden willing contributors to this noble and philanthropic work.

An important bill is now before the Maryland Legislature which provides that no child shall work at industry, until they are really twelve years old. Children who should be in the kindergarten, work all night in cotton mills and glass works. In New York to-day, it is a known fact that children 6, 7 and 8 years old are working in cellars and garrets, sewing on buttons, making artificial flowers and other work and in the Republic fully two millions of children, under 16 years of age are earning their own living.

The Bill before Congress for the regulation of child labour in the District of Columbia, if successful, will lead to much improved conditions as to the problem of child labour. No more important subject than that of child labour could be considered by this Association, so intimately connected with the development of tuberculosis from overcrowding and over-taxation of mental and physical energy while the system is really in the formative stage of development. So far, I am not aware that Canada is over-taxed in the lines of child labour, and yet it would be prudent to guard as far as possible, against such, by Legislative enactments now in force.

CHOLELITHIASIS WITH FAT NECROSIS.

BY

J. ALEX. HUTCHISON, M.D.

Mrs H., aged 30, one child born three years ago; admitted to the Montreal General Hospital, March 12th, 1905, suffering from abdominal pain.

History—One day before admission patient was seized with severe epigastric pain, vomiting and nausea. The pain was somewhat paroxysmal in character beginning in the left lumbar region and radiating to the pelvis; there was no pain at any time in the neighborhood of

the right shoulder. The pain continued increasing in violence until admission. Patient states that she suffered from "kidney trouble" nine years ago, typhoid fever twenty years ago and appendicitis of an indefinite character two years ago. Family history negative.

On admission—Temperature normal, pulse 58, respirations 28; complaint of moderate degree of pain in right epigastric region radiating into hypochondrium. No tenderness, no distension. *Urine* at this time showed a specific gravity of 1038, with the presence of sugar; no albumin, no blood, a trace of bile and a few granular casts. A hypodermic of morphia was given with hot fomentations to the epigastrium.

During the following night there was a recurrence of the paroxysmal pain but the character had changed simulating severe labour pains. These bearing-down pains occurred at intervals of a few minutes, and were so severe as to leave the patient utterly exhausted after each occurrence. The pains increased until noon of that day. A careful examination of the vaginal tract excluded any uterine cause for this condition. During the intervals deep palpation of the abdomen caused some pain. The temperature at this time was 101. 1°F., pulse 150, respirations 38. A rectal enema brought away a well coloured stool. There was slight distension with increased resistance. The patient was in an extreme degree of exhaustion. A diagnosis at this time was made of general peritonitis with maximum tenderness in the region of the gall bladder; both flanks were dull.

Operation—Having regard for the previous history of appendicitis, after the usual preparation, a laparotomy was performed the incision being made in the left loin. On opening the peritoneum a large quantity of bile-stained serum escaped; the intestines were found injected with much adherent lymph; the appendix being apparently normal was not removed. The incision was extended upwards to the left costal margin and then at an obtuse angle parallel to the costal margin to the median line. The gall bladder was slightly distended; there were adhesions between it and the liver. Palpation established the presence of a large number of calculi. The common duct could not be palpated on account of the matting together of the tissues in that neighbourhood.

The great omentum and transverse colon were retracted upwards and a hard gangrenous mass the size of an English walnut, apparently the head of the pancreas, was brought into view. This neighbourhood showed the greatest degree of peritonitis and there were a number of areas of fat necrosis. The calculi were removed from the gall bladder by the usual opening and three large gauze drains inserted. The

abdomen was flushed out with a large quantity of normal saline solution and the wound closed. One of the drains led into the interior of the gall bladder, another behind and below the gall bladder in the neighbourhood of the common duct and the third passed below the meso-colon and omentum to the head of the pancreas.

At the conclusion of the operation the patient's condition was desperate; the pulse could not be counted at the wrist and there was a marked degree of cyanosis present. The case appeared to me to be perfectly hopeless; hypodermic injections of strychnia, camphor and ether, hot rectal salines, and subcutaneous salines with artificial external heat were required. After several days of a precarious existence the patient gradually improved until she left the hospital, apparently well on March 6th. The patient has since been under observation on two different occasions, suffering from abdominal pain without vomiting or other constitutional disturbance. On each occasion the attack has lasted a day or two and has not been paroxysmal. On careful examination I have concluded that the condition was functional.

Dr. B. W. Gillies reports the result of the pathological examination as follows: Gangrenous tissue, typical fat necrosis; peritoneal fluid; no growth; cultures from discharge from wound showed a few days after operation, the bacillus coli.

EXTIRPATION OF CHRONICALLY INFLAMED TEAR SACS.

A PROPHYLACTIC MEASURE AGAINST DISEASED CONDITIONS OF THE CORNEA.

BY

FRED. T. TOOKE, B.A., M.D.,

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The practice of excising the lacrimal sac has been followed by ophthalmic surgeons for a number of years, but generally only to remove diseased conditions in this structure. This procedure has, however, also been adopted to advantage as a prophylactic course against the infection of corneal incisions and other serious sequelae in intraocular operations, when the tear sac has been found to be unhealthy. But the routine practice of removing this source of infection as a preventative measure against ulcers and other pathological conditions of the cornea, which produce partial or complete blindness, has only been fully appreciated comparatively recently.

Axenfeld with an experience of many hundred excisions states that nearly eighty percent of these belong to members of the working classes. Such people can least afford the loss of sight, which, unfortunately, occurs in nearly thirty-five per cent of these cases of dacryocystitis by the formation of permanent dense opacities of the cornea resulting in blindness. These statistics cannot but impress one with the serious handicap, placed upon these unfortunates, as wage earners, in the struggle for existence. The tax, which they must sooner or later become to the community is another serious consideration which cannot be overlooked. Such facts show, beyond all doubt, that an individual suffering from chronic dacryocystitis, is constantly menaced by severe ulceration in the cornea, resulting in complete or partial loss of sight, a condition which, in a very great many cases, can be avoided.

Ricchi working on this subject, classifies the results of his bacteriological examinations as follows. The micro-organism by far the most frequently found is the *staphylococcus albus*. In addition to this he found the *staphylococcus pyogenes aureus* and *staphylococcus pyogenes citreus*, the *bacillus coli*, and *streptococci*. He also found a host of saprophytes, as the *bacillus subtilis*, *radicosus*, *ramosus*, *luteus*, *fluorescens putidus*, and *sacchromyces* with many others, and in one case showed the presence of the *actinomyces albus*. One organism, that most dreaded by ophthalmic surgeons in cases of corneal abrasion, the *pneumococcus*, is strangely enough not included in Ricchi's classification. Axenfeld states that his *diplobacillus* is also found to flourish here as it does in the conjunctival sac.

Many workers along these lines have shown that if there is a stricture of the lacrimal canal at any point, more particularly at the nasal duct, as is most commonly the case, that stagnation of the drainage of tears is produced, and that no more fertile culture medium can be found than the lining of the sac. We also know that, in diseased conditions of the lacrimal sac, the organism most commonly found there, the *staphylococcus albus*, assumes a decidedly more virulent form than when it is found in the conjunctiva with the tear sac in a healthy state. Further, when a diseased sac has been removed, that a non-virulent species of micro-organism, is generally found to be present in the conjunctival secretion, whilst, when the diseased sac is undisturbed, forms of a much more virulent type are found to flourish.

That there are numerous cases of stenosis of the nasal duct and many of actual dacryocystitis where no rational treatment has been attempted or requested is a fact brought home to us every day by many of the unfortunate conditions of permanent blindness due to subsequent corneal

involvement. We cannot close our eyes to the fact that there are numbers who cannot or will not wear protecting glasses and yet who are, on account of their respective callings, daily exposed to corneal injuries. The mechanic, the foundry-man, the farmer, the lumberman, are to be numbered amongst those who are frequently, unknown to themselves, afflicted with tear sac trouble, at the same time to whom superficial injuries to the cornea are of frequent occurrence. Country people particularly are exposed to tremendous risks. Such people suffering from dacryocystitis are frequently isolated from any one with a definite knowledge of special diseases of the eye, and disastrous results may follow a simple abrasion of the cornea by a wisp of straw or the end of a twig.

An excellent opportunity for permanently curing dacryocystitis and preventing many lamentable conditions of blindness, more particularly in the poorer classes is at our hand in the radical extirpation of the lacrimal sac. Ophthalmic surgeons are slowly but surely becoming convinced of the fact that conservative methods of treatment have been unsatisfactory. Even though the stricture be opened bacteria are still likely to re-collect in their former habitat when the stricture reforms as it probably does after treatment has been discontinued after a little time. The use of the galvano cautery only produces additional cicatricial tissue without completely removing the diseased mucous membrane. Probes are actually dangerous in the hands of the inexperienced; periostitis, false passages, rupture of ethmoid cells, with the formation of chronic inflammatory tissue in the neighbourhood rendering subsequent dissection and extirpation of the sac more difficult and tedious are some of the results due to the use of probes.

Besides, it has been shown, in cases of dacryocystitis that the stricture is produced as a rule, not by a swelling of the mucous cells as we would suppose, but by an engorgement of the subperiosteal veins. Probing the sac in such cases can easily be seen to be useless. Furthermore, in poor people and still more in people living at a distance from medical attendance, it is absolutely impossible to have treatment of a conservative character satisfactorily carried out for any length of time. The conservative treatment, in cases of chronic suppurative dacryocystitis, dilatation of the sac, fistulæ, recurrent erysipelas and perilacrimal abscess with dacryocystitis we must admit as unsatisfactory. In actual hypopion ulcer of the cornea or keratitis with any of the above mentioned conditions an excision is not only indicated but imperatively demanded. One must, however, take the precaution of avoiding undue pressure upon the globe.

From a bacteriological standpoint, as I have already related, the procedure of excising the tear sac is most heartily to be endorsed. We have seen that conjunctival sacs with tear passages containing a very virulent micro-organism show a much milder form of bacteria or no bacterial growth at all when once the tear sac has been excised.

But while many have acknowledged that the complete removal of the lacrimal sac in diseased conditions is frequently indicated the operation has been unpopular on account of the hæmorrhage which takes place during the operation. Further, the field is frequently hidden by blood and fragments of the secreting membrane of the sac are left remaining in the wound of the cavity; epitheliation occurs, and fistulæ result. Axenfeld's recent work on the subject and the technique employed and recommended by him have rendered the operation decidedly easier, and have removed many of the difficulties which formerly prevented ophthalmic surgeons from excising the sac, appreciating though they did that a total extirpation was indicated as the best prophylactic measure to be adopted against future corneal trouble.

The method employed by Axenfeld is as follows:— The field of operation is rendered as aseptic as possible by the use of soap and water and then by an application of a solution of bichloride of mercury. Should one prefer to operate under local anæsthesia, a few drops of a four percent solution of cocaine in one-in-a-thousand adrenalin is injected into the tissues about the sac fifteen minutes before the patient is placed on the table. This injection is repeated immediately before the operation. I, however, prefer to operate using general anæsthesia because after seeing a great many diseased sacs removed under a local anæsthetic I am not satisfied that the method is a painless one. A veil of sterilized gauze, with an opening large enough to expose the patient's eye, side of the nose, and upper part of the cheek, is spread over the face. The initial incision is made from the inner canthus directly above the internal angular ligament, two or three millimeters in front of the crista lacrimalis. The incision should be directed downwards and outwards in a crescentic direction for about two and a half centimetres. This incision must be quite deep cutting through the periosteum. A shorter incision than the one I have specified should not be attempted: there are occasions where a very prominent crista lacrimalis will almost occlude a view of the sac in the under lying fossa, and unless an aperture is made sufficiently large to expose this fossa and its contents there is always the danger of leaving a part of the secreting membrane of the sac in situ. Subsequent fistula formation is the inevitable result. The consideration of a slightly smaller incision from a cosmetic stand-

point is not to be considered; the wound heals by primary intention and after a short time little or no evidence can be found of the previous incision.

One of the chief difficulties in this operation is the suppression of a violent and obstinate hæmorrhage. The employment of Pans forceps is impossible on account of the smallness of the cavity and because the vessels are situated so deeply they cannot be fastened upon. After the primary incision is made, digital pressure is exerted over the wound for one or two minutes, and then Müller's small speculum is introduced, holding the edges of the wound apart laterally. A much larger speculum, with reversible and adjustable tips corresponding to the ends of small sharp retractors, an instrument specially devised by Axenfeld for use in this operation, is then placed in position. This separates the edges of the wound vertically. These specula serve two purposes; they expose a quadrilateral field for operation and are of decided assistance in arresting hæmorrhage. In addition, they eliminate the necessity of having an assistant's hands holding retractors in front of the operator. Bloch, of Freiburg, has made a suggestion regarding the control of hæmorrhage which Axenfeld carries out, a procedure which I have followed in the cases upon which I have operated. A large number of wooden applicators about the shape and size of a penholder are previously sterilized and the tips armed tightly with sterile absorbent. Firm pressure and swabbing can be undertaken in this manner, procedures which could not be followed so well with the ordinary gauze sponge. These applications are also of service in re-applying adrenalin solution to the wound.

The periosteum is now carefully retracted forward over the edge of the crista lacrimalis and downwards as far as the bony canal covering the nasal duct. If the hæmorrhage is sufficiently under control the lacrimal sac should be seen nestled in the underlying fossa lacrimalis. The sac is now seized by a pair of fixation forceps and drawn gently forward, while a careful dissection with a pair of small sharp-pointed curved scissors is begun below the sac. A method which I have found to be of decided value and which I always employ at this juncture is, when once I have separated the sac at one point from the underlying fossa, to introduce a tenotomy hook under the sac. I am now able to follow the sac downwards to the nasal duct and upwards to the puncta, always cutting beneath the heel of my hook without fear of wounding the sac above. Very little subsequent dissection of the overlying connective tissue is necessary and the sac is severed as close to the puncta above and to the nasal duct below as is possible. When the sac has

been removed a specially devised curved curette is introduced into the nasal duct which is quite denuded of its mucous surface: this procedure allows subsequent drainage of the cavity for one or two days after the operation, and assures the operator of complete stenosis by the formation of cicatricial tissue about the duct rendering any subsequent infection through the nose impossible. The wound cavity formally occupied by the sac is thoroughly irrigated with warm bichloride solution and the edges of the skin wound are brought together by a few silk sutures. A small firm roll of absorbent cotton about the thickness and half the length of one's little finger is placed over the line of incision, and a firm compress dressing is applied. This should be left undisturbed for three days; the sutures may be removed on the fifth day.

The advantages of this procedure are briefly as follows:—The operation is not dangerous; a very small wound is necessary, allowing one all the space he requires to carry out a complete dissection. As very little disturbance takes place in the surrounding tissue there is no reason for producing secondary complications, as injury to the ethmoid cells, or periostitis. The operation is a complete one; the sac being removed from the canaliculi above to the nasal duct below and the mucous membrane lining the nasal duct being completely curetted away no secreting surface remains; an absolute sense of security from future infection from this source is thus afforded both the patient and the surgeon. From a cosmetic standpoint it is all that can be desired; the very small incision is hardly more noticeable than one of the ordinary lines of the face.

The objection that, after excision of the sac, tears are still secreted and that epiphora continues does not hold. We know from actual experience that when this source of infection has been removed irritation of the conjunctiva is allayed and the reflex secretion of tears not produced. Should, however, tears persist to secrete the difficulty can be readily be overcome by the simple operation of excising the accessory lacrimal gland, a procedure which is never followed by any untoward results.

The third annual meeting of the Association of French-speaking physicians of North America will be held in Three Rivers in June.

At a recent meeting of the Boundary Medical Society, uniform medical contract on the basis of \$1.00 per month was adopted and a uniform scale of fees for the whole boundary district was adopted.

T H E

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

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THE PUBLICATION OF PAPERS.

One of the regulations put forward for the Government of the meeting of the British Medical Association, at Toronto, reads as follows: "All papers read are the property of the British Medical Association and may not be published elsewhere than in the *British Medical Journal* without special permission." It is not stated from whom this permission is to be obtained, and we take it to mean that authority is to be sought from the reader of the paper. We may be wrong, but that is the course which this Journal intends to follow in default of better information.

The regulations though signed by the local secretaries, Drs. Starr, Wishart and MacKenzie, were evidently prepared in London. It is excellent journalism to endeavour to secure, so large a body of material for exclusive publication at number 2 Agar Street, and if that is

the intention, we think the fact ought to have been more specifically stated. It is quite possible that other Canadian journals will adopt the view that is within the rights of the reader of a paper to choose the medium through which he will seek publication. This is a principle for which we have always contended, that each Journal should stand upon its own merits, and be free to exercise its own judgment in respect of all papers which are offered to it.

The prestige of the *British Medical Journal* is so immense that it can well afford to adopt this sound principle of freedom, allowing to each reader and to each Journal entire liberty of action. It is quite possible that the official organ will offer the poor privilege of subsequent publication, but that is a gratuity for which this Journal has never strenuously contended. There is force in the contention that all papers which are read at meetings within the British Islands should be printed exclusively in the Journal of the Association. The circumstances this year are so unusual that a new basis of agreement should be sought for the avoidance of confusion and the preservation of good-will.

PRIVATE PATIENTS.

The trouble in Toronto over the demand that patients in private wards of public hospitals shall have the privilege of selecting the physician to whom they shall pay fees is not yet at an end. The *Canada Lancet* in the April issue is hopeful of the result. "It makes but little difference," it says, "what rules the new hospital may lay down, the tendency is growing in Toronto that doctors may attend their own patients, when these patients pay for themselves and are not paid for by the city. Some years ago, a doctor could not attend the highest-priced private ward cases. This was when there was only one hospital. Now, however, there are four general hospitals and a number of special hospitals, and any doctor in Toronto can now make arrangements to attend his own cases, provided they pay for themselves and are not sent in on city orders. This is growing and will in a short time become quite general. It is the determined will of the people to have the right to select their own attendants."

If it is the "will of the people" that the hospitals be opened, as the *Lancet* affirms, they will be opened, whether that procedure works ruin to the hospital or not. We do not look upon the matter as being very important. The private patients are well cared for. The members of the staff who care for them receive some return for their service in the hospital, and unauthorized persons and unapproved methods of treat-

ment are kept out of the wards. We are quite well aware of the arguments on the other side, that it is a hardship to the family practitioner, that the patient is irritated at the restriction which is placed upon him, that public support is withdrawn by those in favour of the open door. If ever the question becomes troublesome in Montreal, we hope to have the experience of our brethern in Toronto to guide us.

MEDICAL INSPECTION OF SCHOOLS.

With that singular capacity for doing nothing which afflicts this community, the medical inspection of schools has been postponed till September, which means indefinitely. We never displayed any great enthusiasm over this project, and thought the work could be well left to the school boards in co-operation with the family practitioner. However, something was done. Inspectors were appointed. A code of regulations was drawn up which was admirable in its completeness. The one objection was that no physician could be found to accept it. The instructions called for five hours continuous work on four days of the week: twenty hours in all for an emolument of six dollars or thirty cents an hour, which is one third the honorarium allowed to the driver of a cab. This spasm of activity was created by that form of public opinion which has its origin in a club of women. However excellent these organizations they are not celebrated for consistency of conduct or tenacity of purpose. Having accomplished this much they will probably be content. The work will have to be undertaken *de novo*. It is unthinkable that the Health Committee should initiate a new movement and it is a safe hazard of opinion that we have heard the last of this troublesome business.

Dr. F. X. Perrault, former superintendent of the St. Jean de Dieu Insane Asylum at Longue Pointe, died 6th March, 1906, at the Hotel Dieu, Montreal, after two weeks' illness. He was born in Montreal in 1825, and after pursuing his studies at the Montreal College, he studied medicine at Victoria College, and began practice at Pointe aux Trembles. When the Sisters of St. Jean de Dieu took over the asylum he was appointed jointly with Dr. Howard as superintendent. A few years later the Government appointed him a member of the medical board of the asylum. Two years ago he retired from practice. His wife, who was Miss Charlotte Demers, survives him after over fifty years of married life.

The Canada Lancet devotes twenty-five pages of the April issue to a consideration of vaccination. In Toronto the opposition to the practice has grown so strong that the School Board has been compelled to rescind the order making vaccination compulsory. Drs. Macallum, Sheard and Oldright conduct the symposium and introduce many entertaining letters to the newspapers. The public controversy is being carried on with remarkable virulence.

In a communication to the *Bulletin Sanitaire*, Dr. E. P. Benoit, Secretary of the Notre Dame Hospital says: "In the article referring to Hôpital St. Paul, January issue of the *Bulletin*, I have remarked that no mention is made of the fact that patients occupying private rooms in the said hospital may be attended by their family physicians. This, I believe, ought to be made public as it puts the hospital at the disposal of families and physicians, therefore conducing to better isolation and easier treatment of contagious diseases." A similar regulation prevails in the new Alexandra Hospital for infectious diseases.

A well considered appeal for increased support has been issued by the board of management of the Protestant Hospital for the Insane at Verdun. The fact that the cost per patient, last year, was only 55½ cents per day (the Government allowance being only 34 cents per day) as against \$1.74 at the Royal Victoria Hospital, \$1.35 at the Montreal General Hospital, and \$1.12 at the Notre Dame Hospital, shows how carefully the institution is administered.

By virtue of the amendments to the Winnipeg charter, granted by the legislators this year, the Health Department has power to force sewer and water connexions in all houses on streets in which sewer and water mains exist, instead of within the first fire limits only, as was formerly the case. There are, it is estimated, about 4,000 houses in the city in which the department will insist on the installation of plumbing under the new powers this year.

The first number of the first volume of the *Bulletin* of the University of Nebraska College of Medicine, has reached us. It contains the most authoritative article which we have yet seen on the *Filaria loa* that elusive human parasite which is occasionally brought to this country by travellers from the west coast of Africa. The *Filaria loa* is a worm about two inches in length, which moves freely in the tissues, and

occasionally coming to the surface produces local disturbance. Dr Henry B. Ward in the *Bulletin* records several cases with operation, some of which were done in Canada.

A new publication to be known as the *Journal of Abnormal Psychology* has appeared under the editorial management of Dr. Morton Prince, of Boston, with whom are associated Professor Munsterberg and Drs. James J. Putnam, August Hoch, Boris Sidis, C. L. Dana and Adolf Meyer. The *Journal* is designed to serve the interests of medicine and psychology, with especial reference to work embodying clinical and laboratory research in connection with abnormal mental states. The *Journal* will discuss hysteria, amnesia, fixed ideas, obsessions, automatism, multiple personality and similar subjects.

Dr. B. D. Gillies, for several years house pathologist at the General Hospital has left Montreal to reside in British Columbia. Dr. Gillies is a sound pathologist, and, whilst in Montreal he impressed the profession by the thoroughness of his work, his adherence to fact and restraint in his statements. In these respects he maintained the tradition of Wyatt Johnston. Dr. Gillies will be a scientific nucleus in his western home and of more value to British Columbia than a gold mine.

The bill to incorporate the Toronto Free Hospital for Consumptives has been forwarded to the Legislature, with a favourable report, by the Private Bills Committee. A clause was introduced into the legislation making obligatory the forwarding of all plans for a new hospital building to the Provincial Secretary for submission to the Provincial Board of Health. Another amendment made it possible for municipal corporation to contribute to the support of the institution. The directors are: W. J. Gage, W. A. Charlton, H. P. Dwight, H. C. Hammond, J. L. Hughes, R. H. Davies, Ambrose Kent and W. Lloyd Wood.

Reviews and Notices of Books.

THE EXAMINATION OF THE FUNCTION OF THE INTESTINES BY MEANS OF THE TEST-DIET.—Its Application in Medical Practice and its Diagnostic and Therapeutic Value. By PROF. DR. ADOLF SCHMIDT, Physician-in-Chief of the City Hospital Friedrichstadt in Dresden. Authorized Translation from the latest German

Edition, by CHARLES D. AARON, M.D. Price, \$1.00, net. F. A. Davis Company, Philadelphia.

This is a well-considered monograph upon an important subject. It sums up the author's experience for a period of eight years and aims to do for the intestinal canal, what has already been done for the stomach. The amount of work which it represents is amazingly large.

SAUNDERS QUESTION COMPENDS: ESSENTIALS OF GENITO-URINARY AND VENEREAL DISEASES. By STARLING S. WILCOX, M.D., Starling Medical College, Columbus, Ohio. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$1.00 net.

This little work is a worthy addition to Saunders' Question-Compend Series, a series that has reached a sale of over 265,000 copies.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By ELLIOT W. ROCKWOOD, M.A., M.D., University of Iowa. Second Edition. F. A. Davis Company, Philadelphia, Pa.

This is a well arranged course. A student who follows it will acquire all the knowledge and experience which is necessary for him.

THE SCIENCE AND ART OF PRESCRIBING. By E. H. COLBECK, B.A., M.D. (Cantale) AND ARNOLD CHAPLIN, B.A., M.D. (Cantale.) Grand Edition. Henry Kimpton, London, 1906.

This is in effect a reproduction of the first edition, though certain errors have been rectified and some sections amplified. It is a most useful book for students who desire to learn the art of prescribing, and for physicians who still practice that art, and do not surrender themselves to ready-made formulæ.

AIDS TO SURGICAL DIAGNOSIS. By H. W. CARSON, F.R.C.S. Price \$1.00. London, Bailliere, Tindall & Cox, Canadian agents, J. A. Carveth & Co., Toronto.

This little book will, as the author hopes, "prove of service to those for whom it is written."

NURSING IN THE ACUTE INFECTIOUS FEVERS. By GEORGE P. PAUL, M.D., Troy, New York. 12mo of 200 pages, illustrated. Philadelphia and London: W. B. Saunders and Company, 1906. Price \$1.00 net.

The author has divided his work into three parts: The first treats of fevers in general; the second of each fever individually; the third

deals with practical procedures and information necessary to the proper management of the various diseases discussed. Much of this information is of value to physicians as well as nurses.

THE OPERATING ROOM AND THE PATIENT. By RUSSELL S. FOWLER, M.D., Surgeon to the German Hospital, Brooklyn. Octavo of 172 pages, illustrated. Philadelphia and London: W. B. Saunders Company, J. A. Carveth & Co., Toronto, 1906. Cloth, \$2.00 net.

This book deals with the procedure of the operating room, sterilization and preparation of patient, materials and instruments. The operating surgeon will find it of value, as it furnishes him a guide to which he may readily add his own variations of technique.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION, Vol. XXIII. Edited by RICHARD H. HARTE, M.D., 1905.

This volume of the Transactions contains the papers which were read before the American Surgical Association at the meeting held in July, 1905. It contains twenty-three important papers on surgical subjects. The volume is illustrated by 21 plates, one coloured and several figures.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice. By G. E. DESCHWEIHITZ, M.D., Fifth edition, revised and enlarged, 1906. Published by W. B. Saunders Co., Philadelphia and London. J. A. Carveth & Co., Toronto, Canadian Agents. Price, cloth \$5.00; half moracco, \$6.00.

The fifth edition of this well-known text-book shows evidence at every point of painstaking and studious revision. The work, which, as a whole, forms an attractive volume, can be unreservedly recommended as a clear, interesting, and sound exposition of present-day ophthalmology.

Medical News.

ROYAL VICTORIA HOSPITAL.

Report for the month of March: Patient admitted, 269; discharged, 263; died, 19; medical, 89; surgical, 114; ophthalmological, 22; gynaecological, 34; laryngological, 103. Outdoor department:—Medical, 98; surgical, 713; eye and ear, 368; diseases of women, 142; nose and throat, 565. Total, 3,775. Ambulance calls, 88.

SOCIETE MEDICALE DE MONTREAL.

Meeting of March 20th, 1906.

The president, Dr. Boulet, occupied the chair. The following members were present: Drs. Cleroux, Hervieux, Larin, Marien, Mercier, Asselin, de Martigny, Dubé, Roy, Valois, Plourde, Masson, Bourgoun, Racitot, Rousseau, Handfield, Desmarais, Lebel, Laramée.

Dr. St. Jacques presented living cases in which he had employed metallic suture for fractures.

Dr. Boulet read an appreciation of the life and work of Dr. de Vecker, of Paris, and a resolution was passed expressing the sense of loss which ophthalmological science had sustained in his death.

Dr. St. Jacques showed a specimen of gangrene of the hand following thrombosis of the axillary artery, and a tumour of the kidney. Dr. St. Jacques also gave two case-reports upon cancerous degeneration of sebaceous cysts.

Dr. Oscar Mercier reported an interesting case of rupture of the vagina.

ST. JOHN BRANCH OF B. M. A.

At a meeting of the medical men of St. John, held on 28th March, it was decided to form a St. John, New Brunswick, branch of the British Medical Association and to apply to the general secretary of the association for such charter.

Dr. Murray MacLaren was elected chairman and Dr. J. H. Scammell secretary. The chairman stated the purpose of the meeting and detailed the advantages of such affiliation. Dr. Thos. Walker moved that the meeting declare itself in favour of forming a branch of the British Medical Association and that those present pledge themselves to become members of the new branch. Dr. Emery seconded the motion and it was carried unanimously. Dr. G. A. B. Addy moved that the secretary obtain the names of those willing to join and to forward these to the general secretary. The signatories were: Dr. Thos. Walker, Dr. S. S. Skinner, Dr. D. E. Berryman, Dr. J. H. Gray, Dr. G. B. Addy, Dr. Wm. F. Roberts, Dr. M. MacLaren, Dr. P. R. Inches, Dr. F. L. Kenny, Dr. Jas. Christie, Dr. J. F. Bentley, Dr. A. F. Emery, Dr. W. T. McVey, Dr. L. A. McAlpine, Dr. T. D. Walker, Dr. W. L. Ellis, Dr. J. H. Scammell.

In addition to these names the application will contain signatures of nearly all the other practitioners in the city, as the idea is very

generally favoured by the profession. Dr. McAlpine then moved that the name of the branch be the St. John, New Brunswick, Branch of the British Medical Association. This was seconded by Dr. Ellis and carried.

Dr. A. Thompson, of Strathroy, died of heart failure on March 31st, in the 70th year of his age. He was a member of the Provincial Board of Health.

Dr. S. B. Smale, one of the oldest physicians in the county of Huron died at his home in Wroxeter after a few days illness with pneumonia. Deceased was well known and very highly respected and enjoyed a very large practice. He had resided in Wroxeter for upwards of thirty years.

Dr. J. W. Moke died at McGregor, Essex Co., on April 8th. He was a graduate of Toronto University, and was 31 years of age.

During the month of March 259 patients were admitted to the Montreal General Hospital, and 238 were discharged. There were 19 deaths, six of which occurred within three days of admission. The average daily sick in the hospital was 198, and the highest number of any one day, 209. Outdoor consultations numbered 4,318, an increase of 361 over the previous month. The ambulance made 109 runs in response to calls. The average number of visitors at the hospital on visiting days was 252.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

WILLIAM B. COLEY, M.D.—Late results of the Treatment of Inoperable Sarcoma by the Mixed Toxins of Erysipelas and Bacillus Prodigiosus. *Amer. Jour. Med. Sc.*, March 1906.

This paper gives a more or less detailed account of the writer's experience with the mixed toxins in the inoperable cases of sarcoma. In all, 96 cases are tabulated, 36 being his own and 60 those of surgeons reported to him. The results obtained so far in the personal cases show 5 well in less than one year, 4 well from one to two years, 3 from

two to three years, 5 from three to five years, and 21 from five to thirteen years, and of these 21, ten were well over ten years. Of the cases treated by other surgeons 12 remained well less than a year, in 6 the tumour disappeared and the patient was well from one to two years, and 9 from two to three years, in 12 from three to five, in 10 from five to twelve years. 5 cases recurred within periods of from six months to two years, and 2 died during treatment. From this we see that no less than 53 out of 96 cases regarded as absolutely hopeless and inoperable, were well from three to twelve years. The results show that the mixed toxins are much more efficacious in sarcoma than in carcinoma but he believes his experience justifies advising their use as a prophylactic after primary operations for carcinoma as well as for sarcoma. He would also employ preliminary toxin treatment in nearly all cases of sarcoma of the extremities before resorting to amputation. The following suggestions are given for the administration of the toxins. Always begin with a minimum dose, for the reason that individual susceptibility varies much and the more vascular the tumour the more severe the reaction. For local injections (into the tumour) the dose should be $\frac{1}{4}$ to $\frac{1}{2}$ minim, for interstitial (remote from tumour) one minim. This dose should be gradually increased until a chill occurs ($\frac{1}{2}$ to 2 hours after injection) followed by a temperature of 101° to 103° or 104° F. If there is much depression following the reaction and the patient's general condition is not very good, it is wiser to give the injections every other day, but if the patient can bear daily injections the chances of success are much greater. In cases where the tumour is situated in some region where injections are difficult or dangerous, such as the pelvis or abdomen, it is better to give systematic injections into thigh, buttocks or abdominal wall. If the tumour becomes soft and fluctuating, it is better to open these areas, establish drainage and treat with moist antiseptics. A good tonic, preferably iron, quinine and strychnine should be given during treatment, and careful attention should be paid to keeping the bowels free. In successful cases a marked improvement is usually noted within one to four weeks. If no improvement has occurred at the end of four weeks of vigorous treatment, the chances are that none will occur, and little is to be hoped for more than a retardation of growth, and it may be wise to abandon the treatment or lessen the dose to the point of not making the patient uncomfortable by reason of chills. If there is improvement, the treatment should be continued until the tumour has totally or nearly disappeared. In some cases treatment has been continued in small doses more than a year, the patients are now well many years after cessation

of treatment. When the sarcoma has become generalized, as shown by the presence of distinct metastases the prognosis is naturally much more grave, and formerly he advised against the use of the toxins. There have been certain reported cases and some in his own experience, which have shown wonderful improvement, so that now he holds that no case is so desperate as not be worthy of a trial of the treatment. He has, however, had no permanent success in cases of extensive generalization or in melanotic sarcoma.

JOHN H. GIBBON, M.D.—The treatment of Diffuse and General Peritonitis, with Special Reference to the Murphy Method. *New York Medical Journal*, April 7, 1906.

The treatment of general peritonitis is probably one of the most discussed subjects in surgery at the present time. On one extreme we have Ochsner who does nothing in the way of operative interference, on the other we have Price, who thoroughly irrigates the entire peritoneum. Occupying a position between these two extremes we have what is now known as Murphy's treatment which consists essentially of opening the abdomen at once, looking for and removing the cause of the inflammation, and thoroughly draining the abdominal cavity with the least possible disturbance of the viscera. And along with this we have the best operative treatment which consists in elevating the patient's thorax to at least thirty-five degrees (Fowler's posture) and the administration of a quart of salt solution every two hours per rectum to aid drainage, overcome shock and aid elimination. The writer reports eight cases of general peritonitis so treated. Six cases were caused by the appendix, one by typhoid perforation, and one by perforated gastric ulcer. The typhoid died, the parents refusing operation until thirty hours had elapsed. The gastric case was operated upon four hours after perforation and recovered. There were six cases due to appendix, with two deaths. Of these one had septic thrombosis of the meso appendix and gave every prospect of recovering up to the fifth day when he developed symptoms of pulmonary embolism. No post-mortem was allowed. The other was profoundly septic and died twelve hours after operation.

The writer prefers gauze to rubber tube for drainage, but gives no reasons for his preference.

EDMUND OWEN, F.R.C.S.—“Reducible Inguinal Hernia in Boyhood.” *The Practitioner*, March 1906.

We have presented to us in a most charming manner a general consideration of this subject. The contrast between the South Sea Island

baby, who is put into the water to swim long before he can walk or stand, or between the Zulu boy, the offspring of a splendid physical stock and the children of modern European parents, taking little exercise, leading an indoor self-indulgent life, makes it of small wonder if the muscles of the inguinal canal are of such poor fibre as to offer but the mildest hindrance to the descent of a congenital hernia. The important part that improper feeding plays both in the production and in connection with the palliative treatment of hernia in children is dwelt upon. Attention is also drawn to the matter of proper micturition. As regards treatment. Many hernia can be cured by the intelligent and unwearying use of a thick skein of wools. Others, having a larger peritoneal aperture require a truss, but it is only by an operation that one can be absolutely certain that the communication with the abdominal cavity has been shut off. It is on this account that one is the more inclined to advise operation since an unobliterated funicular process is a snare of the utmost danger. But whether the radical or palliative treatment be employed it is essential that the child should be put to bed with his pelvis raised. In this connection it is of interest to note that Percival Pott, a hundred and thirty years ago, at a time when prompt incision was not the order of the day, gave the following advice for the treatment of strangulated hernia. "The posture of the body and the disposition of the lower limbs may be made very assistant in this operation, when the difficulty is considerable, the nearer the posture approaches to what is commonly called standing on the head, the better, as it causes the whole packet of small intestines to hang, as it were, by the strangulated portion, and may thereby disengage it." A form of treatment we have found useful on more than one occasion. Regarding the procedure for the radical cure he holds that the first essential is that the sac should be pulled well down and ligated high up and believes that in children this alone would give a cure in 95 per cent. It is to safe-guard the other 5 per cent that he puts in sutures, usually of silk or silk worm gut, which bring the conjoined tendon down to Poupart's ligament. He does not believe in transplanting the cord, and is very much against separating the flaps of the external oblique as is done in the Bassini operation. He is also opposed to twisting the sac as it is unsafe to twist where one cannot feel. His rule is to keep the boy three weeks in bed, and three weeks on the sofa. As regards wearing the truss after operation he advises, as a rule, that the boy wear his old truss for a few weeks, provided the spring is not too strong, as it acts as a sort of reminder to him that he is not yet strong enough to bear all the strain which in his boyish, thoughtless way he might be apt to put upon it.

T. STANMORE BISHOP, F.R.C.S. Eng.—“On Biliary Calculi.” *Lancet*, March 24th, 1906.

Cases of gall-stones may be primarily divided by a broad line into those which are associated with inflammation and those which are not. Theoretically, this position is open to question, since the presence of gall-stones presupposes inflammation, but clinically the division is of practical value as it is only when inflammation accompanies gall-stones that we have symptoms which call for relief. These inflammatory conditions may be super-acute as in the ordinary biliary colic, subacute where the symptoms are not referable to the biliary tract but rather reflex ones pointing to gastric or intestinal conditions. Ten cases are cited as showing the difficulty in making a differential diagnosis in this last group. The writer regards Murphy's test of more importance than that of Mayo Robson for detecting tenderness in contracted and deeply seated gall bladders. He holds that cholecystotomy and choledichotomy as at present carried out are eminently safe operations, and would limit excision of the gall bladder to those cases of gangrene.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

J. F. BINNIE. “Hepatoptosis or Floating Liver.” *Am. Jour. Med. Sc.*, April, 1906.

This condition is one which is seldom recognized, although undoubtedly much commoner than is usually supposed. Einhorn states that he personally saw 30 cases in five months, or in 3.5 per cent of patients consulting him for digestive troubles. Ferrier agrees with Glenard that the affection is of frequent occurrence.

The etiological factors vary. The writer does not consider that tight lacing produces the condition, but on the contrary a well-fitting corset is a useful method of treatment.

Increased weight of the organ may be the cause of ptosis, but it is difficult to estimate as it is so frequently associated with malnutrition, itself a factor of undoubted importance in the production of ptosis. Cholelithiasis and cholecystitis may possibly precede the development of ptosis, but the relationship is at present somewhat obscure. It may prove that these conditions are the result rather than the cause of

ptosis, or ptosis may be the result of the associated malnutrition. The ligaments of the liver and the vena cava afford a considerable degree of support to the organ, and Faure has shown experimentally that the organ is more readily dragged down after division of the ligaments.

Lack of support by the intestines and abdominal walls is of more importance in maintaining the organ in situ than is suspension by the ligaments. The most important immediate cause of ptosis is relaxation of the abdominal wall, resulting from pregnancy or other forms of abdominal distension. Malnutrition operates by relaxing the abdominal walls, in the removal of supporting abdominal pads of fat and in allowing of stretching of the abdominal ligaments.

Hepatoptosis is invariably associated with ptosis of other organs, resulting from similar causes.

The symptoms vary with the degree of the affection, and in many cases are entirely absent. Digestive disturbances are frequent, constipation and tympanites being usually present. Pain is often severe, but is more liable to be indefinite. Gueniot has observed a dragging pain behind the upper end of the sternum, due to the tension on the diaphragm, and through it on the mediastinal structures. Ascites and jaundice are infrequent. The diagnosis rests on physical signs. In some cases a mobile tumour is felt, corresponding in shape and dimensions with the liver; it is dull on percussion and the normal site of the liver is resonant. By manipulation the organ may sometimes be replaced. In slighter degrees the organ may be felt during inspiration by grasping the abdomen below the costal border between the thumb in front and the fingers of the same hand behind.

Treatment must be directed toward improving nutrition and increasing the strength of the muscles by suitable exercises and massage. A suitable belt or corset prevents further displacement by affording support to the organ. In severe cases surgical intervention may become necessary.

A. ERNEST JONES. "The Onset of Hemiplegia in Vascular Lesions. *Brain*, 1905.

This article is based on the fatal cases occurring at University College Hospital for a period of sixty-five years.

Vascular lesions only have been recorded. In all there were 160 lesions occurring in 139 patients; 123 were cases of hæmorrhage, 24 of thrombosis and 13 of embolism.

It is now recognised that it is exceptional for any of these lesions to occur during great exertion, a feature which Gintrae's series of 840 cases, made 50 to 100 years ago, amply establishes.

The symptoms of onset. Nausea and vomiting were frequent at the onset of cerebral hæmorrhage, and comparatively uncommon in other vascular lesions. Twitchings and convulsions were more frequent at the onset of occluding lesions, and especially when the cortex was affected. General convulsions occurred in nearly one third of the embolic cases. Convulsions may occur in hæmorrhage apart from meningeal or ventricular bleeding, but are more common under these circumstances.

Loss of consciousness is more frequently noticed in hæmorrhage than in occlusion.

In the present series the following figures bears out this view. This symptom occurred in over 80 per cent of cases of hæmorrhage, in thrombosis 45.5 per cent, and in embolism 46.1 per cent.

Unconsciousness is more frequent in intra-ventricular hæmorrhages than in others, but its noteworthy that consciousness was retained until near the end in four cases of the former condition.

An apoplectiform onset, whatever its cause, increases the gravity of the prognosis. Of the extra-ventricular hæmorrhages more than twice as many died of the immediate attack when the onset was apoplectiform.

The immediate prognosis is much graver with hæmorrhage than with softening. In a series of 109 cases of hæmorrhage 72.5 per cent died within a week, the numbers being about 30 per cent for the two forms of softening in the same period. On intra-ventricular hæmorrhage nearly 60 per cent of the patients died in the first 24 hours. One patient lived forty minutes, another thirty, and one only fifteen, recalling Abercrombie's case that proved fatal within five minutes. Two patients lived for a month and one for six weeks presenting post mortem evidence of a clot in the ventricles throughout.

Of the extra-ventricular cases, the one running the most rapid course proved fatal in ten hours. Mushet has published a case of this nature that died in thirty minutes, so that a rapid termination is not confined to ventricular hæmorrhages.

In thrombosis early death is certainly rarer than with hæmorrhage, but about the same percentage prove fatal in a month.

In embolism the problem is complicated with a cardiac lesion, which is usually the direct cause of death. In a surprising number of cases malignant endocarditis, previously unrecognized, has been found at autopsy. The mortality is decidedly less than thrombosis.

There is no indication that hæmorrhage affects one side of the liver oftener than the other, and even in embolism it cannot be stated with certainty which side is most frequently attacked.

GEORGE M. GOULD. "A Biographic Clinic on Gustave Flaubert."

Medical Record, April 14th, 1906.

Dr Gould epitomizes his article as follows: Flaubert from boyhood to the day of his death was the victim of unrecognized eyestrain. His epilepsy typical or atypical, his "hystero-neurasthenia," his "migraine," or whatever name be given his symptoms, was the glaring consequence of abuse or overuse of slightly astigmatic or otherwise ametropic eyes. The mental and moral shock of the discovery led to his morbid seclusion and unhygienic life, but every indication points to a control of epileptic tendency by means of opium. This unhygienic life was partly offset by the violent "exercise" that Flaubert habitually took in his study, by means of howling, declaiming, stamping, walking, and so on. This regime met with three compensations: 1. Ocular rest; 2. excitations of the emotions and mind to overcome the inhibition of eyestrain; 3. muscular exercise. The writer concludes by emphasizing the effect of eye-train in its wrecking power on the character, intellect, and will of this writer.

W. E. DEEKS, M.D. "Suggestions on the nature and treatment of Rheumatism." *New York Medical Journal*, March 3rd, 1906.

Dr. Deeks gives a summary of the views which are held upon the ætiology of Rheumatism briefly as follows:

Cullen's theory. He believed that rheumatism was due to the direct influence of cold on the joint structures, the coverings of which were so thin that they were unable to protect the deeper tissues.

Nervous theory. This was suggested and advocated by J. K. Mitchell, and in a modified way accepted by a number of well known physicians.

Friedlander's theory. He believed that the lesion was located in the medulla near the nuclei of the vagus and glossopharyngeal nerves and that the articular lesions are but the peripheral manifestations.

Embolie theory. Heuter suggested that the disease was due to a micro-organism which first invaded the endocardium producing endocarditis and from this emboli were distributed throughout the circulation to the parts affected.

Miasmatic theory. This was advocated by Saunders, Haygarth, Mac-lagan, and others. They believed that the poison was closely allied to malaria in its manifestations.

Infective theory. More recently this has been widely advocated because of the presence in the lesion of a diplococcus. It is claimed that

the lesions resemble pyæmia in their distribution, but differ in that they do not go on to suppuration. Later on this will be referred to in greater detail.

The lactic acid theory has had more advocates than any other. It originated with Prout who claimed that the rheumatic poison was lactic acid and originated as a chemical poison from the perversion of some nutritional process. Lactic acid is a product of tissue metamorphosis, and is produced during muscular activity. It may be excreted unaltered or become oxidized into carbon dioxide and water. Its adherents believe that chilling of the skin arrests sweat excretion and consequently elimination of lactic acid. Profuse perspiration is an effort of system to throw off the poison. This theory was opposed by such men as Garrod, Bouchard, Fuller, MacLagan, Salomon, etc. The strongest evidence in its support, however was that adduced by Sir Walter Foster in 1871. He administered small doses of lactic acid to a patient suffering from diabetes mellitus and immediately set up an acute attack of rheumatism. The rheumatism subsided with the cessation of the administration of the lactic acid and recrudesced when it was again given.

Neurochemical theory. This was advanced by Dr. Latham as a modification of the lactic acid theory. He thought that exposure to cold caused constriction of the cutaneous vascular areas and reflexly through the vasomotor system corresponding dilation of the vascular areas of the muscles and of the viscera, thus increasing molecular transformation in their substances. Products of muscular metabolism are lactic and glycolic acid, and these passed into the system unoxidized. Latham believed that uric acid is the actual poison both in rheumatism and gout, but that in rheumatism the phenomena are modified by the presence of lactic acid in addition.

In the observation of cases of rheumatism of all forms, the writer was confronted with their invariable association with some stomach disorder of hyperacid or fermentative type. Although frequently the patient denied that he was a sufferer from stomach trouble, still a careful symptomatic history would reveal its presence. The discovery of this relationship led to the investigation of a series of related diseases, tonsillitis, iritis, pleurisy, etc., for the presence of the same factor, with invariably the same result. The conclusion was then drawn that probably the condition of the stomach was the primary factor, or at any rate was an antecedent feature, in the causation of rheumatism and prepared the way for the invasion of some specific organism.

If this were true then it would be necessary, Dr. Deeks argues, in all cases of acute and chronic rheumatism to first get rid of fermentative

processes in the stomach before treating the organ or tissue affected, if permanent results were to be obtained.

In view of the above considerations, the author claims, a rational treatment for subacute and chronic rheumatism and one invariably giving good results if carefully adhered to, is treatment directed towards the relief of stomach symptoms in the first place. From the diet should be excluded absolutely for a time sugar and potatoes; and bread should be greatly limited, particularly toast. If fermentation still exists the administration for a few days of dilute nitric acid in twenty drop doses well diluted before meals; or if constipation be present, rhubarb and soda after meals is indicated. Some one of the salicylic acid series internally, such as sodium salicylate, etc., in physiological doses should be given; and finally the administration of counter irritants and electricity, either static sparks or high frequency currents.

Dr. Deeks gives no evidence as to the value of electricity—nor does he offer any suggestion as to why it should be beneficial in rheumatism.

F. C. SHATTUCK. "Diet in Nephritis." *Journal A. M. A.*, January 6th, 1906.

Dr. Shattuck lays down the following as the principles pertaining to the dietetic treatment of nephritis: 1. Such control as we may have to-day of nephritis lies in diet and mode of life rather than in drugs. 2. Such drugs as are useful are so in their effect on the general organism and the heart rather than on the kidneys directly. 3. In all cases of nephritis the main aim is to spare the kidneys unnecessary work, remembering that the urinary system is but one, of the many, making up the body. 4. In acute nephritis, as well as in the acute exacerbations of the chronic forms, Doctors, Diet and Quiet work together. Starvation for a few days, regulated by the intensity of the process and the strength of the patient, is the keynote here. In the chronic forms the aim is to lighten and to lengthen life. Especially in the contracted form of kidney disease, many years of life and comfort may depend on the physician's skill in adapting sound principles to the particular case and in securing the co-operation of the patient in persistently carrying out the directions given. Dietary restriction should, in the main, be quantitative rather than qualitative. Alcohol in moderation is not necessarily a poison and may be an aid to digestion. 6. The excess of proteid, not proteid itself, is harmful to the chronically sick kidney. 7. A varied diet is more likely, than a monotonous one, to promote the making of good blood and improving the general nutrition, and that of the myocardium in particular. 8. The amount of albumin is in itself no guide as to

the extent of dietary restriction. Shattuck remarks the advisability of a relatively dry diet in dropsical cases, proportioned to the degree of dropsy. In cases of contracted kidney, even without dropsy, he thinks physicians have erred in forcing water, and that the main service von Noorden has rendered is in advocating the limitation of liquids.

THOMAS CLAYTON, M.D., "A More Liberal Diet in Typhoid Fever." *Medical Record*, March 17th., 1906.

The writer's treatment of a case of typhoid fever, no matter what day of the disease it may come under his care, is as follows: The regulation six ounces of milk are given every two hours, night and day, while the patient is awake. In place of milk, in order to vary the monotony for those who can take milk, and as a substitute for those who can not, animal broths are given. After the subsidence of the more acute symptoms, the patient is asked if he is hungry, and if he replies in the affirmative a soft-boiled or poached egg is allowed, and if well borne the number is gradually increased to three or more a day. Jelly or blancmange, custard, soft toast, the soft part of baked apple, and rice which has been boiled four hours, are the next additions. After this, scraped beef or chop, very finely divided chicken, and baked potatoes are tried. The writer does not advocate so full a diet in every case, for each patient must be carefully studied as an individual. He believes that most of the foods mentioned are quite as digestible, far more palatable, and rather less likely to cause perforation or hemorrhage by their local action, or gas production than milk. The writer appends a table of twenty-six cases. These patients all recovered. He adds that the advocates of more liberal diet claim that the patient is more comfortable, the attack is slightly shortened, convalescence is more prompt, and relapse, hemorrhage, and perforation are not more frequent.

ELI MOSCHOWITZ. "A New Method of Treatment of Acne." *Medical Record*, January 16th, 1906.

Eli Moschowitz has applied Biers' principle of hyperemia to the treatment of acne and reports very good results. The procedure consists in the application of dry cups to the affected region for one-half hour, once or twice a day. The suction must be very slight and the cup is removed and applied every one or two minutes. It takes from two to five sessions for each area to effect the desired result. The method does not prevent the appearance of new pustules although they become less frequent. Eight cases were treated by this method alone with satisfactory improvement.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The thirteenth regular meeting of the Society was held Friday evening, April 6th, 1906, Dr. F. R. England, President, in the chair.

EXCISION OF THE LACRIMAL SAC.

Dr. F. T. Tooke exhibited two patients upon whom this operation had been performed. A full description of the procedure will be found on p. 336 of this number of the *JOURNAL*.

J. M. ELDER, M.D.—I would like to ask Dr. Tooke how, if the tear duct is entirely obliterated and filled up with cicatricial tissue, and the lacrimal gland still being left, epiphora does not occur? What becomes of the lacrimal secretion?

W. G. M. BYERS, M.D.—I was greatly interested in Axenfeld's operation as described to me first by Dr. Tooke; and I decided when the occasion arose to ask him to put into practice the extensive experience of this procedure which he had acquired under Professor Axenfeld in Freiburg. The results as seen by the cases presented here to-night are entirely satisfactory. I have performed excision of the lacrimal sac in the old way on quite a number of occasions, and with uniformly good results; but I am convinced of the superiority of this newer method. The Axenfeld procedure offers a larger field of operation, and, what is of more importance, a practical certainty of removing the sac in its entirety. I congratulate Dr. Tooke upon the success of his cases; and I am personally grateful to him for instruction in the technique of this important operation.

F. T. TOOKE, M. D.—With regard to Dr. Elder's question I am afraid that I can only say that he appreciates reparative adaptability of nature as well as I do. It is simply one more case where nature adapts itself to circumstances; if the gland does not secrete as much as it formerly did, it is simply appreciating the conditions that exist and acting accordingly.

PULMONARY GANGRENE AND ABSCESS.

RIDLEY MACKENZIE, M.D., read a paper upon pulmonary gangrene and abscess.

G. E. ARMSTRONG, M.D.—The difficulty in differentiating between abscess, gangrene and bronchiectasis, is sometimes very great and from

my experience in the General Hospital I can say that sometimes even with the greatest care one may be led astray. The presence of elastic tissue, so far as my experience goes, is a very good evidence in favour of gangrene and rather against the condition being one of bronchiectasis. The odour is sometimes "gangrenous" in bronchiectasis and sometimes absent in gangrene, depending upon fetid change and a mixed variety of infection. The presence of elastic tissue is evidence in favour of gangrene and its absence that the case may possibly be one of bronchiectasis rather than of gangrene of the lung, even if the odour is just as bad as it is possible to be. The method of operating has been pretty well worked out and is now established on fairly definite lines. Exception has been taken by some writers to the aspirating needle in these cases claiming that it may be followed by infection of the pleura. I do not know that I have any direct evidence to give on this but I think it may be assumed that if the surfaces do not happen to be adherent at the time an infective pleurisy may be set up. The difficulty of determining whether the pleural surfaces are adherent at the time of operation is very considerable. In more than three fourths, probably 80 per cent of the cases that I have operated upon the pleural surfaces have been united and adherent so that one could go directly into the lung cavity without infecting the pleura. Sometimes one is not sure and if time is not urgent, if there is any doubt—if it feels thin—it is just as well to put in a row of sutures around the opening where the rib has been resected and then in 72 hours the two surfaces have become sufficiently united to enable one to go into the cavity without infecting the pleura. This is not always possible as patients come into the hospital in a condition where one is not fully justified in making any delay. If one can get directly through into the cavity without infecting the pleura it is very much more desirable; but if the accident does occur it is not always a terrible calamity. Previously I went with very great care through the cavity with a thermo-cautery but a very much safer way which I have come to now is by passing first a director through the thickened layers of the pleura and dilating with small forceps, then substituting a larger pair, and finally passing in the tube. In bronchiectatic cases I find a very good way is to pack with iodoform gauze, which seems to answer very well, then afterwards a tube is placed in to make less trouble in dressing. The one difficulty I have had is that of getting sufficient drainage. The abscess cavity very often has a large opening into a bronchus just about its top and if a good deal of lung happens to lie over the lower part of the cavity one may get into the upper part of a large cavity. Where there was a large

opening into a bronchus just within $\frac{1}{2}$ inch of the top of my opening into the cavity, in one case, the patient improved and the chronic condition remained with a sinus and I subsequently had to make a second opening and then the progress towards recovery was very much more rapid and ultimately quite satisfactory. There are cases reported of this bronchiectatic condition, apparently localised and affecting the branches of one bronchus, which are so extremely fetid that they are an offence to everybody, and where an operation as usual for abscess or gangrene has proved most satisfactory. König has reported two such cases where by drainage he has made these people fairly comfortable both to themselves and to those about them. In addition it is to be noted that the earlier these cases receive drainage the better, before the cavity has become thickened and before the walls are so thick that they will not collapse. Sometimes it is adherent to the chest wall preventing contraction and at other times it would seem as if the pericardium formed one wall. In one case this was so, at the operation there was a space which did not seem as if it could close except by the heart coming over or by excising a portion of the rigid chest wall. I think the earlier these cases are done the better so far as the ultimate closure of the cavity is concerned.

F. G. FINLEY, M.D.—I have been very much interested in Dr. MacKenzie's paper as I have seen a considerable number of the cases he has recorded. It is a very difficult matter to draw a sharp line between gangrene and abscess; distinctions have been laid down in a broad sense but these do not always hold. I have been rather struck by the number of cases of abscess which occurred in alcoholic individuals; in one case there was alcoholic epilepsy and it was following one of these seizures that signs of abscess developed, the inference being that it was really an inhalation process which set up the suppurative process. In another case a similar mechanism occurred in a young woman who was brought into the hospital for a series of epileptic seizures. The autopsy showed numerous abscesses lying in broncho-pneumonic patches. So far as the recognition of these cases go they are sometimes extremely difficult to localize. In one case the X-Ray gave the first clue to the localization of the lesion; there was a distinct shadow on the plate, and later on the abscess pointed in the back. I have occasionally found it difficult to distinguish between a localised empyema and an abscess, and in one or two cases only operation has led to a diagnosis. So far as treatment goes the medical treatment is most unsatisfactory and certainly as early as we can fix the site of the abscess or a gangrenous area and the patient's condition warrants it, surgical measures should be resorted to without delay.

J. M. ELDER, M.D.—I just wish to emphasize one point which Dr. Armstrong made in the surgical treatment, and that is the necessity of early intervention. In one of the first cases I saw I had that forced upon me very well. It was a case of abscess in one of the nurses at the Montreal General Hospital. A diagnosis was made and we decided that we would operate at one o'clock. At 12 o'clock, pus rushed from the nostrils and the mouth, and she died at once, having been practically drowned. This danger is one of the things one should consider as liable to occur from the rupture of the abscess. With regard to the aspiration cases, I think a very great majority of them are secondary to bronchiectatic conditions. But I remember another case, where abscess of the lung developed, apparently following upon operation for ligature of hæmorrhoids in a young woman. Previous to operation there had been no evidence of any lung trouble at all, but in ten or twelve days she began to develop high temperature, and eventually an abscess of the lung was made out by the physician. I removed the rib and got at the abscess and she got better. It does seem then, that these abscesses are sometimes embolic.

J. ALEX. HUTCHISON, M.D.—I was very much interested in Dr. MacKenzie's paper, as it is a subject which has not been brought before the Society for some time past. One case I had where I drained the upper part of the lung from behind following excision of the tongue; it was a very malignant condition involving the floor of the mouth and where operation was not done hoping to save the patient's life but merely to remove the foul-smelling mass. Although drainage of the cavity was kept up the patient succumbed; he was alcoholic. I recall to my mind a case where gangrene was the fatal result after ligation of hæmorrhoids. Long ago it was recognized that this condition did supervene upon ligation of hæmorrhoids. Then it was considered that the thermo-cautery was the best measure. In the case of Dr. MacKenzie's where I was associated with him, when I opened the cavity and drained it the man was almost moribund and I did it as a dernier resort; I met him on the street yesterday and he is perfectly well.

A. R. PENNOYER, M.D.—I have had the privilege of watching some of Dr. MacKenzie's cases and have had two or three in my own private practice. Some points in connection with the difficulty in diagnosing some of these abscesses have not been emphasized enough. One of my cases I had some two years ago following a frank lobar pneumonia, the patient was a strong healthy fellow and apparently making a steady convalescence, when in a few days he started a septic temperature and became extremely ill, the still dull condition in the lung obscured the

signs of abscess and my consultant had about concluded that we were dealing with malignant endocarditis when the diagnosis was cleared by the patient coughing up 40 or 45 oz. of pus of a most foetid odour. That it was not from a ruptured empyema was shown by failure on several attempts to get positive results with an exploring needle and also from subsequent events. The man is quite well now without further interference. Another case I had six years ago, following a pneumonia of an influenzal type two years previously. She had been spitting up pus ever since, without severe septic trouble only general deterioration in health, the diagnosis was possibly a localized empyema, ruptured into a bronchus. On excising a piece of rib I found I had no empyema at all, but that the condition was within the lung, which I could easily determine both from the distance to which I had to pass the needle and from anatomically demonstrating the layers of pleura. I opened through here and did what I should never do again, namely, introduced my finger into the cavity and broke down everything much as I would in dealing with a breast case, I nearly lost my patient from hæmorrhage, after a few days, however, her recovery was progressive and ultimately complete.

F. R. ENGLAND, M.D.—One case comes to my mind which offers a good example of the difficulty which may attend the diagnosis. When the Canadian Medical Association last met in Montreal, one of our medical friends from the West attended the meeting; he had been troubled for over a year with chest symptoms, irritating cough, shortness of breath, etc., which he attributed to a piece of chewing gum which he thought he had accidentally inhaled during sleep. He had been in the habit of chewing gum at night after going to bed. One morning when he awoke the gum was missing and he experienced some discomfort about his chest and had an irritating, harassing cough. His chief reason for coming to Montreal was for advice and treatment. He consulted some of our leading clinicians, who after careful examination informed him that his symptoms were in all probability due to an aneurysm. He returned to his home; all the symptoms became aggravated and he finally underwent an operation for abscess of the lung. At the operation it was found that the greater part of one lung had been destroyed and unfortunately the termination was fatal. In this case notwithstanding the history, there was apparently a great deal of difficulty in recognizing the true nature of the condition.

RIDLEY MACKENZIE, M.D.—The 14 cases of abscess of the lung were primary abscesses following pulmonary inflammation. In the pathological reports I found a good many cases secondary to carcinoma of

the tongue and operations for magignant disease in the neck. These I have not reported. Operative procedure is certainly the best means of treating both gangrene and abscess.

CEREBRAL COMPLICATION FROM NASAL DISEASE.

R. H. CRAIG, M.D., read a paper upon cerebral complication from nasal disease.

WESLEY MILLS, M.D.—I think on grounds anatomical and physiological alone we are indebted to Dr. Craig for presenting us with some views, which are, if not new, perhaps insufficiently considered. The argument in favour of nasal breathing under ordinary circumstances is certainly I think not thought of very frequently by most of us. If it rests upon really good foundation, and it seems to be nature's arrangement at all events, it deserves practically more consideration than it has been given. With regard to dizziness I think we must remember that there may be very many sources of that peculiar symptom; really any thing that to a very considerable extent disturbs our ordinary experience through the senses is likely to give rise to dizziness so that we are not necessarily bound to an explanation of a purely mechanical kind which seems to be what has occurred to Dr. Craig himself. I can believe that the condition which he emphasizes may in other ways than mechanical ones give rise to dizziness. Altogether this is one of the most suggestive and original papers in the views that are brought together that I have heard or read for a good while.

F. R. ENGLAND, M.D.—I do not altogether understand the explanation given by Dr. Craig as to how the emptying of the ethmoidal veins depends upon nasal breathing. Dr. Craig, I think, stated that when there is obstruction to nasal breathing, there is in consequence, a poor circulation in the ethmoidal veins and longitudinal sinus.

R. H. CRAIG, M.D.—In reply to Dr. Archibald's question with regard to dizziness secondary to obstruction in the superior half of the nose. The cases that I have reported are all of a chronic nature. We can readily understand that in acute nasal obstruction such as in acute rhinitis the sensation of dizziness if it is present disappears when the inflammation subsides. With reference to Dr. Mills' remarks, I do not wish to attribute all cases of dizziness to obstruction in the superior half of the nose but simply to draw the attention of the profession to the fact and the advisability of examining the nose in such cases.

I have frequently seen cases of Ménière's disease benefitted by breaking down the adhesions between the ossicles of the middle ear and thus bringing about an equalization of air pressure and restoration of the

equilibrium of the labyrinthine circulation. I remember one case in particular upon whom I operated, over two years ago. The patient had been treated by several eminent special surgeons without obtaining relief. She was about fifty years of age and subject to frequent and pronounced attack of ear vertigo associated with deafness and tinnitus aurium. Examination revealed catarrhal otitis media chronica. As the noises and deafness were much pronounced in the left ear I incised the drum membrane, cut the tensor tympani muscle and moved the ossicles freely from within outwards.

A suitable hook was inserted in the opening in the membrane and the ossicles were subjected to the above treatment every other day for a period of two weeks. The tinnitus and dizziness completely disappeared, the hearing power was slightly improved and there has been no recurrence of dizziness since the operation. These cases that I have referred to both nasal and aural, undoubtedly show that by restoring the equilibrium of the circulation at the base of the skull many annoying and disagreeable symptoms can be greatly benefitted and if attended to in the early stages a 'cure' can frequently be promised.

With regard to Dr. England's question, it is rather difficult to answer. The view has recently been advanced by Grunwald and I merely mentioned it.

NEPHRECTOMY FOR MALIGNANT TUMOUR IN AN INFANT.

E. W. ARCHIBALD, M.D. and C. B. KEENAN.—Dr. Archibald read the clinical notes of this case; Dr. Keenan exhibited the pathological specimen and read the report.

F. R. ENGLAND, M.D.—I would like to ask Dr. Archibald, in the event of recurrence, which so frequently occurs, whether the recurrence is local, appearing at the seat of operation, or metastatic, occurring in some other part of the body. The hypernephromas, which are generally met with in middle life, have of late been much studied and with great interest by the pathologists; their exact origin is still, I believe, a debatable question. I would like to ask Dr. Keenan if he thinks there is any analogy between the so-called mixed sarcomata of the kidney, generally occurring in very young children, and the hypernephromas; the latter are supposed to be due to displaced suprarenal rests and Dr. Keenan says the former are thought to be due to displaced Wolffian bodies.

C. B. KEENAN, M.D.—With regard to the analogy between the two so-called adeno-sarcomata of the kidney and the hypernephromata: In the hypernephromata we have a reproduction of part of the normal

gland with anaplasia in direct proportion to the malignancy. So we have in these adeno-sarcomata or mesodermata, an attempt to reproduce the structure of the Wolffian body. Of course here as in hypernephromata the more malignant is the tumour the more marked the anaplasia. This does not explain in any way the presence of striped muscle, although one might think this nephrogenic tissue did not cut off clean from the lateral muscle plates and so happened to include within itself a portion of the myotome. I may say both these tumours of the kidney, illustrate this peculiar type of new growth, which one may term "malignant organs."

BRITISH MEDICAL ASSOCIATION.

President, Sir Thomas Barlow, Bart., K.C.V.O., M.D., London.

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PROVISIONAL PROGRAMME.

The following subjects have been selected for discussion.

Tuesday, August 21st.—A discussion on "Blood Pressure in Relation to Disease."

The subject will be treated under the following headings:—(a). Physiological Introduction, by Dr. Dawson, (Baltimore). (b). Clinical Methods of Investigating Blood Pressure, by Dr. A. J. Gibson (Edinburgh). (c). Pathology and Therapeutics of Morbid Blood Pressure, by Sir Wm. Broadbent.

The following will also take part: Dr. MacKenzie, Burnley; Sir James Barr, Dr. Janeway, New York; and others.

Wednesday, August 22nd.—A joint discussion with the Physiology Section on "Over-Nutrition and Under-Nutrition, with special reference to Protein Metabolism," to be opened by Prof. Crittenden, of Yale.

Thursday, August 23rd.—Papers on "Heart Block," by Dr. MacKenzie, Burnley; Dr. G. A. Gibson, Dr. Erlanger, Prof. Osler and others.

Friday, August 24th.—Papers.

Robert Dawson Rudolf, M.D., M.R.C.P., 396 Bloor st. W., Toronto; John Taylor Fotheringham, B.A., M.D., 20 Wellesley st., Toronto; Robert Hutchison, M.D., 22 Queen Anne st., London, W., Hon. Secs.

Dr. Wm. Osler has suggested that a Clinical Museum, at which rare and interesting cases can be exhibited, should form one of the features at the meeting of the British Medical Association. The secretaries will be glad to hear of any cases that members would care to exhibit, and request members to communicate with them about such cases.

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No. 6

HUMIDITY AND VENTILATION.

BY

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In the design of any system of heating the engineer should plan to furnish sufficient heat to maintain a comfortable temperature, sufficient moisture to keep the humidity normal, and sufficient fresh air to dilute the gases of respired air to a point where they become harmless. While it is beyond the scope of this article to give much space to heating and ventilation, humidity is considered in some detail, as it is of more consequence than is usually supposed. The remarks concerning humidity apply in general to all buildings artificially heated, though the equipment described would be only suitable for hospitals, and similar institutions—not for private houses or small buildings.

It must be noted that from the effects of deficient humidity the rich suffer more than the poor. Among the poorer classes the kitchen stove is often the only source of heat; and a boiling kettle keeps the humidity normal. In flats heated by a hall stove, a water pan helps to moisten the air, and similarly houses heated by hot air furnaces have a tank from which water evaporates. It is therefore, chiefly with steam and hot water heating that we find too dry an atmosphere and its consequent effects, overheating and stuffiness.

Watery vapour exists in the atmosphere and mixes with it just as does any other gas. It is a common fallacy to consider that water is absorbed by the air, though a vapour will form whether air is present or not. Water exists in three states, solid, liquid, and gaseous, being the boiling point at atmosphere pressure 212°F . Below the boiling point a vapour will form, but there is a limit fixed by the temperature and pressure to the amount of vapour which a cubic foot of space may contain. When this limit is reached evaporation ceases, and the vapour is said

to be saturated. If the temperature is increased further evaporation may take place, and if decreased some of the vapour will be forced back into the liquid state. The saturation point is often called the dew point. The following table gives the weight of the unit volume of saturated vapour at atmospheric pressure for various temperatures.

0°	.553
12°	.910
22°	1.414
32°	2.128
42°	3.080
52°	4.389
62°	6.167
65°	6.965
72°	8.547

The above table shows that at 70° if saturated a cubic foot will contain 8 grains of moisture, at 32° a little more than 2 grains, and at 0° about $\frac{1}{2}$ grain. Normal air has a humidity varying from 50 to 70 per cent, saturation being 100 per cent, and if much above or below these limits uncomfortable sensations result. If a saturated mixture of air and vapour at 0° is heated to 70° without adding moisture the humidity at the higher temperature will be but 6 per cent or eight times dryer than the lower limit stated above. This is the condition during the winter months, and while the air is not quite so dry as six per cent it is not uncommon to find an average indoor humidity of 28 per cent to 30 per cent during the entire period from December 1st to March 1st. In other words in severe weather so much moisture is precipitated by the low temperatures that when heated, the air is practically devoid of watery vapour, and there is an abnormal tendency for evaporation of moisture from any available source.

With the humidity as low as 30 per cent the effects of dryness are very noticeable. A thermometer registering 70° will drop, if the bulb is covered by a damp cloth, to 53°. Moreover, a temperature of 70° in an atmosphere so dry will not be comfortable, some people demanding from 74° to 76°, and others as high as 78°. The temperature recorded by the wet bulb thermometer is the temperature one would feel if ones clothes were saturated with moisture as after emerging from an accidental bath. Since the body is always kept moist, however, by excretions from the pores of the skin, the wet bulb temperature, plus a few degrees, is the temperature one always feels. On the other hand 70° with a normal relative humidity of 60 per cent would be universally

declared too warm. It is apparent, therefore, that to accept the readings of a dry bulb thermometer as a gauge of the sensible temperature is clearly unscientific, inadequate and misleading.

Moisture evaporating from the body produces a sensation of chilliness, which is not in accord with the temperature, for evaporation invariably abstracts heat. The cooling effect of evaporation is well demonstrated by dropping on the skin a little ether, alcohol, or any other liquid which volatilizes at ordinary temperatures. With the humidity normal the evaporation is so slow as to produce no sensible effect, for as the vapour approaches the saturation point the tendency to evaporate is not so strong. With the humidity at 30 per cent, however, the rate of evaporation is very rapid, making it necessary to maintain high temperatures in order to offset the chill of evaporation. Moreover, since different constitutions keep the skin differently moistened, a temperature satisfactory to one person may be too hot or too cold to suit another, if the air is dry enough to make the cooling effect of vaporization an important factor.

In describing a series of tests, Dr. Henry Mitchell Smith states, "In the first place, it was observed that with a proper percentage of moisture 70°F was uncomfortably hot, 68°F warm, and 65° comfortable. By proper percentage of moisture is meant one which is never below 50 per cent or above 70 per cent average about 60 per cent. It was determined by repeated experiments that a temperature of from 65° to 68° and a relative humidity of 60 per cent produced the most comfortable conditions which were in marked contrast to a temperature of 72°F with a relative humidity of 30 per cent. The former felt warm and balmy, the latter notwithstanding the higher temperature, chilly and dry, and the slightest motion of the air suggested a search for the source of suspected drafts. Moreover, properly moistened indoor atmosphere lacks all the oppressive dry feeling so characteristic of the average artificially heated room, seeming more like the corridor of a well ventilated hotel. The quieting effect of such an atmosphere is striking. There is an indescribable sense of relaxation and "poise" contrasting strongly with the feeling of nervous tension so frequently experienced in overheated dry rooms."

In speaking of the effects of dryness Dr. Smith says, "The skin and the mucous membrane of the respiratory passages are the principle sufferers, since these tissues are always kept moist with their own secretions, and from them water is freely abstracted to satisfy this large

Henry Mitchell Smith, M.D., in a paper before Brooklyn Medical Society, May 15th, 1903.

saturation deficit, such air passing with every inspiration over the moistening surfaces nature has provided in the mucous membranes calls for an enormous output of the fluid elements of these tissues. This leads to glandular overactivity, and its consequent evils, the elaboration of which subject the scope of this paper does not permit."

The saturation deficit mentioned by Dr. Smith is the amount of moisture required to bring the vapour to saturation point, and is perhaps a better figure for comparison than the relative humidities. The following table gives statistics for various climates:—

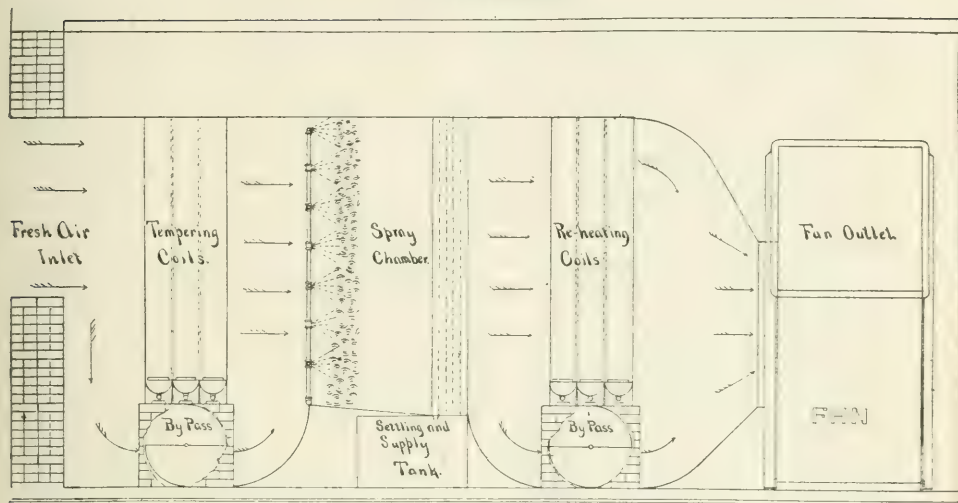
CLIMATES ON AN AVERAGE FROM OCTOBER TO APRIL INCLUSIVE.

Location	Average Temp. of	Ave. Rel. Hdy. of 100 p. c. being saturation	Absolute Gr. per cu. ft. at rel. Humidity Col. 3	Humidities Satn. Gr. per cu. ft.	Satn. Deft. Gr. per cu. ft.
New York	44	73	2.404	3.294	.860
Montreal.....	24	78	1.199	1.550	.351
Denver.....	51	50 (ap'rox.)	2.111	4.222	2.111
Common indoor conditions	72	30 "	2.564	8.547	5.983
Satisfactory indoor conditions	65	60 "	4.179	6.965	2.786

Column 6 of the above table shows that the indoor air in Montreal has a capacity to absorb about 14 times as much moisture as the outdoor air during the same period. It also shows the indoor air almost twice as dry as the atmosphere at Denver, Col., and if the figures were available we should find the indoor air actually dryer than the atmosphere of any desert.

To improve conditions the apparatus illustrated in figures I and II have been successfully applied. The apparatus illustrated in Figure I is designed to supply fresh air warmed to the temperature of the room, and to moisten the air supplied to maintain a constant humidity. In Figure II more heating coils are added, which raise the temperature above that of the rooms, the sprays being used as before to regulate the humidity. With this equipment, however, no radiators are required in the building for a comfortable temperature may be maintained by the surplus heat of the entering air.

The apparatus in Figure I will be recognized as an indirect ventilating system. It is called indirect because the coils are located in the base-



ELEVATION

FIG. I.

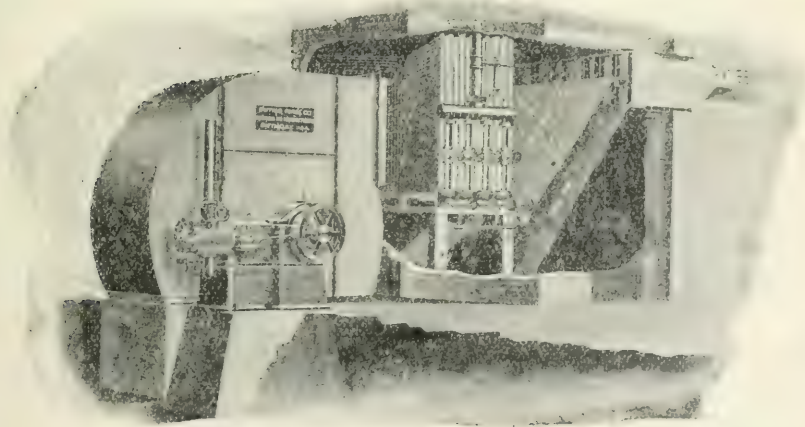


FIG. II.

ment, and air drawn through by a fan is distributed by means of ducts to the various rooms. Following the course of air in Figure I the fresh air inlet will be found at the left. The air entering passes through the first coils called the tempering coils, which heat it to 56° . In the chamber just beyond the tempering coils the temperature is never more than 57° or less than 55° for a thermostat is placed there, which when the temperature gets to 57° opens the damper below the coils thus admitting only the heated air. In this chamber 200 or 300 very small nozzles deliver water in a fine invisible mist. There is then a series of baffle plates through which the air must pass to remove the water carried along mechanically for the velocity in this chamber is about 600 feet per minute. Beyond the baffle plates is another heating coil with a passage below and the air beyond this coil is kept at 65° by automatic regulation of the damper as explained before. A fan and distributing ducts completes this system, which is used only to furnish fresh air warmed to 65° and properly moistened. With this arrangement heat must be provided by radiators in each room.

In Figure I a detail is shown of the baffle plates to separate the water carried mechanically with the air. The object of these plates is partly to remove water and partly to remove dust and other impurities mixed with the air. The first four bends are rounded so that a film of water forms which makes a surface very efficient in taking from the air both moisture and dust. The last plates have a slight projection which prevent this film of water from being blown through, and water and dust runs down along these edges to a tank below where the water is filtered and returned again by a centrifugal pump to the sprays. There is no waste of water for what is not absorbed is kept in circulation and only enough is added to keep the suction tank constantly at the same level.

In schools it is customary to allow 200 cubic feet of air per hour for each pupil, and thus for a school with 100 pupils 200,000 cubic feet of air should be supplied per hour. In hospitals an allowance of 4,000 cubic feet of air per hour for each person is not too much, and on this basis the same amount of air would be required for fifty patients. If the thermometer outdoors registered zero, and a temperature of 65° were to be maintained indoors with a relative humidity of 65° it is an easy matter to calculate the amount of moisture required to bring the air at the indoor temperature to the proper relative humidity. Referring to the table given we find that the indoor atmosphere will contain 553 grains of moisture per cubic foot and 4.4 grains are needed to give a relative humidity of 65 per cent at 65° . We will need therefore to

supply $4.4-.553=3.847$ grains of water with each cubic foot of air making a total of about 110 lbs. of water per hour or about 13 gals. per hour.

This moisture is supplied automatically, the amount being controlled by the temperature of the spray chamber. Leaving the spray chamber we have a saturated mixture of air and vapour no matter how dry the entering air. At 56° and 100 per cent humidity each cubic foot carries 4 grains of moisture, which, as we have already seen is approximately the amount required.

When the apparatus is both to heat and ventilate a building there will be the same arrangement as before up to the inlet of the fan, and beyond the outlet other coils are placed to raise the temperature from 65° to 85° . A passage is left below these coils so that there are two ducts, one carrying the air at 85° , the other air at 65° . This arrangement is shown in figure II, and the ducts are marked hot air and cool air. These ducts are kept separate until the mixing dampers are reached, which are placed in both ducts joined together by a rod so that one will operate with the other. They are so placed, however, that when the damper from the hot air duct is closed the damper from the tempered air duct is open, and vice-versa. These dampers are operated from the rooms either by a chain pull marked, "open" and "shut," or by thermostats to give automatic temperature regulation. The illustration shows the dampers operating by thermostats. The duct beyond the damper marked "mixed air" is carried to the room from which the damper is controlled. When the room is warm enough the hot air damper is closed, and all the air enters at 65° . If too cold, part of the air enters from the warm air duct, both being half open. If still cold the warm air duct is open wide and air enters at about 85° . It will be seen that a certain volume of fresh air is thus supplied at a temperature varying to suit the demands.

The advantages of such a system are first, all of the heating apparatus is placed in the basement in charge of the janitor; second, a more even temperature may be maintained in the rooms; third, ventilation is supplied in positive quantities; fourth, humidity is kept constant and the air is well moistened; fifth, repairs are seldom required, and when needed do not necessitate expensive destruction and replacement of plaster, woodwork and flooring.

The disadvantages are, first, that power is required to run the fan; second, it must be designed and installed by engineers experienced in this class of work; third, space must be allowed for the apparatus and flues.

The cost of ventilation, is, in severe weather, a considerable item for when fresh air is admitted it must be heated to the temperature of the rooms it is to enter. On the contrary when moistening the air, while considerable heat is necessarily absorbed by the moisture, lower room temperatures are made possible which will show a net decrease in fuel consumption.

EPITHELIOMA OF THE SCROTUM.

BY

J. ALEX. HUTCHISON, M.D.
Montreal.

Chimney sweep's cancer is a well recognized condition, and has been seen from time to time among chimney sweeps in England for a great many years. It was thought at first to be a disease peculiar to those working in soot, but it has been shown to be a disease liable to develop among those working in coal tar products, and is sometimes spoken of as Paraffin Worker's Cancer.

The disease is due to the direct irritant action of coal tar products, acting in the presence of moist skin surfaces, and is invariably preceded by a condition of subacute or chronic eczema. It affects a very small proportion of workers, however, and is very slow to develop, as in the case under consideration, after many years of regular employment in a tar paper factory. After the disease makes its appearance its progress is exceedingly slow, frequently covering several years, and in this regard is somewhat different from epithelioma in other parts of the body.

Glandular involvement is also late, and it has been known to appear several years after the removal of the disease. The glandular system once being involved, however, the disease is usually fatal.

The only treatment at present known is prophylactic and radical. By prophylactic measures much has been done to protect workmen in this kind of occupation; by their being taught to frequently change their inner garments and by attention to personal hygiene, actively treating in the early stages any development of eczema. The radical treatment consists in wide excision.

The following case entered the Montreal General Hospital on February 28th, 1906. The patient, M.F., aged 40, married, was occupied as a worker in a tar paper factory. He was born in the Province of Quebec, and has lived for the past twenty years in Montreal. The family history is negative.

The present complaint dates back some two years ago, when he suffered from an irritation on the back of the left wrist which dis-

appeared in about a week. From time to time similar conditions occurred on different parts of the body, especially on the arms and legs. It is no doubt that this was a condition of acute eczema. He has never since been entirely free from the eczema, it being present continuously upon the scrotum.

In this region small wart-like excrescences developed, and have been gradually getting larger, more numerous, and during the past month a number of them have coalesced forming a large, heaped-up irregular ulceration from which a thin, ichorous discharge is seen to cover the surface. About a month before admission he had a somewhat severe eczema involving the upper parts of the arms and backs of the hands. He has in addition a double inguinal hernia. There are no enlarged glands to be felt.

The diagnosis of epithelioma of the scrotum known as Chimney Sweep's Cancer being made, operation was advised and the patient consented. This was done on the first of March.

The operation consisted of a wide excision which practically removed the greater part of the integument of the scrotum. In addition a number of small papilomata were removed in the neighbouring skin. The ulceration at no point had invaded the dartos, and I was able by plastic operation to cover the scrotal contents. The wound healed kindly. The right inguinal region was then explored, but no glands were found. The patient was in residence about three weeks.

THE SURGERY OF THE STOMACH IN NON-MALIGNANT CONDITIONS.

BY

GEO. E. ARMSTRONG, M.D.,

Surgeon to the Montreal General Hospital.

Mr. President and Gentlemen:—

One of the fields of surgery largely extended during the past few years is that of the stomach and duodenum. We now deal not only with conditions which may be called strictly surgical, such as perforations, malignant disease and pyloric stenosis, but are sometimes able to render valuable aid to the physician in cases of persistent and frequently recurring small, and large alarming hæmorrhages, as well as in chronic ulcer and its sequelæ.

Perforation of the stomach or duodenum from ulcer calls for surgical aid, as peremptorily as from traumatism. I have closed five perfora-

tions of the stomach and one of the duodenum. They all recovered but one, a mortality of 16 2-3 per cent. Three of the stomach cases occurred in women and two in men. Their ages were from 21 to 40 years. The perforation was closed in one eight hours, in one 11½ hours, in one 24 hours, in one the time of perforation could not be definitely determined, as the man had had attacks of sharp pain in the epigastric region occurring at intervals for four days. In the fatal case the patient was admitted to the surgical side of the Montreal General Hospital 32 hours after perforation had occurred. The hole was closed at once and the pelvis drained through a second small incision. The patient died four days later of peritonitis. They all gave a history of indigestion and in most of them a diagnosis of gastric ulcer had been made at some time previously.

In four of the six cases the perforation followed a period of from 30 days to one year, during which time they had been quite well and free from their old symptoms.

In the five cases the perforation was on the anterior wall. In one nearer the great curvature, in one about the centre of the anterior wall, and in three, nearer the lesser curvature from ¼ in. to four inches from the pylorus.

The duodenal perforation was just outside the pylorus.

Mr. Moynahan divides perforations into three classes, acute, subacute, and chronic. Two of my cases might be classed as chronic. In one, and it was my first, I readily found the small perforation. It was about a quarter of an inch in diameter, surrounded by a thick layer of fibrine, and when this thick layer of fibrine was stripped off, I had an opening in the anterior wall of the stomach, three inches long. The edges were smooth and rounded.

In another case, an apparently small perforation came to admit three fingers when all the fibrine had been removed. Both of these cases did well. It would seem that in these cases an adhesive peritonitis, joining in my cases, the anterior wall of the stomach to the under surface of the liver, occurred before actual perforation took place. Finally owing to failure of the reparative process, extension of the ulceration and probably distension of the stomach, an opening formed and stomach contents escaped.

Another case illustrates what may be called the subacute perforation.

A young man 25 years of age gave the following history. On a Monday about four or five o'clock in the afternoon he felt sick, but continued to work until six o'clock. That evening he took no supper, not because of pain, but because he had no appetite. He retched two

or three times, but slept well that night. On Tuesday and Wednesday he worked as usual and took his meals, which caused him no pain or nausea. On Thursday he took no supper, and during the evening retched two or three times. On Friday at four p.m. he was suddenly seized with severe epigastric pain which radiated along left costal border. He vomited three or four times; no blood in vomitus. He stopped work and went home. He took no supper. During the Friday night the pain was very severe. He was admitted to the hospital at 11 a.m. on Saturday. His temperature on admission was 98 and his pulse 96. His board-like abdomen did not move during the respiration. At 12 noon his temperature had gone up to 101.5 and his pulse to 104. I operated at one o'clock, found the perforation and closed it.

In another case when the abdomen was opened the little perforation was found temporarily closed by a firmly adherent layer of lymph, and I found no evidence of gas or stomach contents in the peritoneal cavity.

This and the two cases of chronic perforation already mentioned teach us how, under favourable conditions, such as an empty stomach, and good reparative power, a minute perforation may be temporarily closed by lymph, omentum or adhesions.

The prognosis in perforations of the stomach is much better than in perforations of the small intestine, or vermiform appendix. The infection is less virulent, and possibly as suggested by Treves, the peritoneum here has greater resisting power. In the stomach cases quantities of sero-purulent matter and jelly-like substance may be removed during the operation for closure and the patient recover. Abdominal rigidity occurs earlier and is more general and board-like. In operating a search for other ulcers should be made. In one case after closing the perforation of the anterior wall, I infolded the thin base of a second ulcer on the posterior wall. Closure was effected by a double row of continuous Lembert's or Halsted's sutures; the first row of catgut, the second of fine silk.

If evidences of other ulceration were present, or the perforation was at the pylorus, I think a gastro-enterostomy would be indicated. I have not done it in any of my cases. The results have been satisfactory and there has not been any relapse so far as I know.

In the case of duodenal perforation, a gastro-enterostomy was indicated, as a preventative of recurrence, duodenal ulcers being ascribed to contact with irritating stomach contents, but the man's condition did not warrant it.

If evidence of a generalized spread of infection is present, the pelvis should be drained through a small incision in the median line just above the symphysis pubes.

Hæmorrhage: — Accumulating experience is gradually developing better defined views as to the time and method of attempting to control hæmorrhage from the stomach and duodenum. As Mr. Moynihan has well said, hæmorrhage may be the earliest and perhaps for a time, the only symptom of gastric disturbance, or it may be the last in a long and tedious course of symptoms.

Of the six cases four recovered. One died suddenly on the eighth day after operation. At the autopsy there was found a double pulmonary thrombosis. The abdominal condition being quite satisfactory; and one died a month after operation of double suppurative parotitis. There had been no further hæmorrhages and the stomach and abdominal incisions were perfectly healed.

In small recurring hæmorrhages from chronic ulcer, there is a pretty general unanimity of opinion that surgical methods should be adopted, when rest and dieting faithfully carried out by patient and physician have failed to arrest the bleeding; when the patient is losing more blood than is being made and a hazardous degree of anæmia is threatening. It goes without saying that aneurism, leukæmia, and hepatic cirrhosis with portal obstruction, should be carefully excluded.

It is much more difficult to decide when to interfere in recurring large, copious hæmorrhages. That as a rule there is a natural tendency to limitation of the recurrence is generally recognized, and taught. That they may go on to a fatal issue in spite of rest, abstinence from food, ice, opium, supra-renal capsule, etc., has been demonstrated many times over. When then can we stand by, and when should we advise action?

It is said that in cases without a previous history of gastric derangement, there is less likelihood of the hæmorrhages proving lethal. This may be true, I have not had a sufficiently large experience to form an opinion on this point, but I may say that in one of my cases the patient had never had any stomach trouble whatever until the hæmorrhage started. In spite of all that an accomplished and resourceful physician could do these hæmorrhages continued to recur at comparatively short intervals seven days. The patient was then almost exsanguinated, and in his opinion, with which I fully concurred, would certainly have died had not the stomach been opened and the bleeding arrested. Further experience may demonstrate that we can afford to wait longer when the bleeding is from an acute than when it is from a chronic ulcer, but in my opinion we must judge of the urgency and danger in each case by the quantity of blood lost, and the frequency with which the bleeding recurs. A hæmorrhage of seven, eight or ten ounces, recurring at intervals of five or six days or a week, would not be as alarming as hæmorrhage of eight or 10 oz. recurring every eight or 12 hours.

Another important point in judging of the advisability of immediate operation is the character of treatment, if any at all, that has been tried.

I am suspicious of copious hæmorrhage 7, 6, 8 or 10 oz., recurring every 8 or 12 hours, after the patient has been put to bed, the stomach emptied by vomiting and all food withheld, together with ice locally, and perhaps morphia hypodermically. A correct decision must depend upon careful correlation of the different factors and individual judgment in each case. I cannot better express my own view than by saying that after two or three hæmorrhages recurring at intervals 7, 8 or 12 hours, and after the third or fourth hæmorrhage recurring at intervals of 12 to 24 hours, surgical resources are advisable, are less hazardous, and more conservative than these included under the term "medical." Anything, however, more than a suggestive working rule is impossible at present.

Somewhat more crystalized is opinion regarding the particular surgical method to be adopted.

The autopsy reports of the Montreal General Hospital show that fatal gastric hæmorrhage takes place under varied conditions. Sometimes the opening in the artery is large enough to admit a silver probe, sometimes water or milk injected into the hepatic artery, flowed in a stream into the stomach. In some instances the opening in the artery is in the thickened wall of an old chronic ulcer, not permitting of closure by contraction. In other cases the source of the bleeding could not be found at all.

In the morbid anatomy of the fatal unoperated cases are suggestions as to the surgical method. Open the stomach, find the bleeding point and arrest the hæmorrhage by ligature, cautery, excision or suture, if possible. If the source of the hæmorrhage cannot be found, do as Mr. Moynihan has done with such uniform success, do a gastro-enterostomy. The search for the bleeding point in the first instance is indicated by autopsy findings, and is based on sound surgical principle, and although Mr. Moynihan has not had a recurrence of hæmorrhage after gastro-enterostomy, in any of his cases, others have not always been so fortunate and the reason is obvious.

CHRONIC ULCERATION OF THE STOMACH AND SEQUELAE.

Not less interesting and for the most part satisfactory are the results obtained by surgical methods in the chronic invalidism and indigestion secondary to gastric and duodenal ulceration.

Among the more common sequelæ are adhesions and bands, pyloric stenosis, hourglass contraction. A good example of displacement by

a band was seen in a woman transferred from Dr. Finley's ward. There were present a demonstrable dilatation of the stomach, indigestion, pain after eating and on two occasions a mild degree of jaundice. She was unable to take care of her house and children. An exploratory incision revealed the pylorus hitched up to the neighbourhood of the neck of the gall bladder by a strong thick band 1 inch long and $\frac{1}{2}$ inch wide. When this was divided the pylorus became normally mobile. It was not cicatricial nor narrowed. The symptoms were relieved, and the patient for a year or more, when heard from was quite well. The band was probably secondary to an ulcer about the lesser curvature, just outside the pyloric ring. Then developed an adhesive peritonitis and later the stretching of the adhesion into a band.

Another most interesting case was that of a young woman in whom there was demonstrable considerable gastric dilatation and indigestion, and imperfect nutrition. A palpable and visible tumour the size of an orange was observed in the pyloric region. It moved up and down during respiration. The diagnosis was gastric dilatation, secondary to gastric ulcer in the neighbourhood of the pylorus, and the accumulation of an unusual quantity of inflammatory and fibrous tissue.

On opening the abdomen I found that the tumour was a clear, thin wall serous cyst projecting from lower border of liver, and not attached in any way to the stomach or pylorus. The pylorus, however, was held closely up by short dense adhesions to the under surface of the liver, near the gall-bladder the cyst was easily enucleated and the pylorus separated and lowered to its normal position. The opening not being narrowed, no gastro-enterostomy was done. Patient made an uninterrupted recovery.

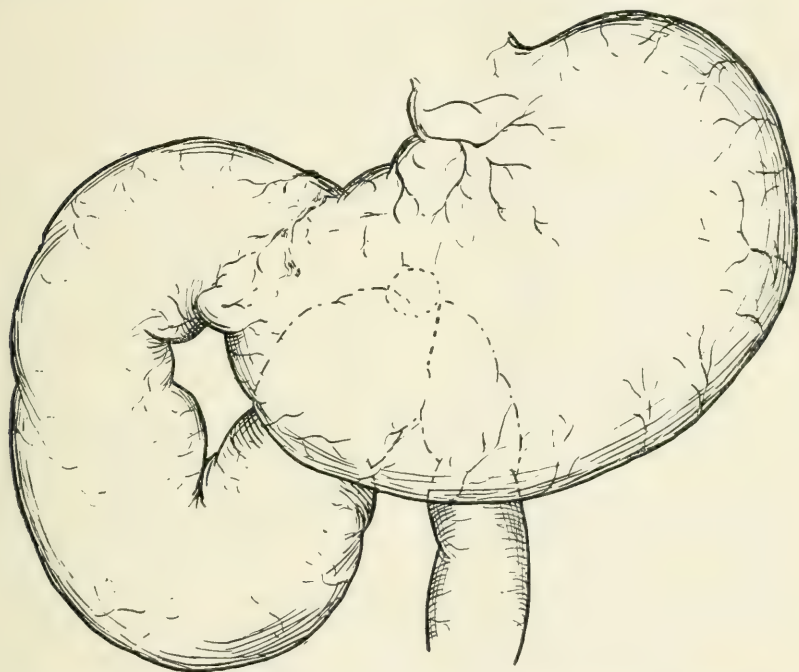
More frequently the chronic ulceration is followed by the development of a mass of cicatricial tissue that narrows the pylorus to the extent of causing an obstruction to the escape of stomach contents, or if situated at a distance from the pylorus, may cause by its contraction and cicatrization, the deformity generally named "hour-glass stomach."

The pyloric stenosis is followed sooner or later by gastrectasis, muscular weakness, motor insufficiency and gastroptosis. A careful analysis of stomach contents is of the greatest value in determining the degree and nature of the altered conditions present. In this group of cases gastro-enterostomy is followed by the most happy and satisfactory results. Patients who had been chronic dyspeptics for years, weak, thin in flesh, living on a spare diet and slops, after the pyloric obstruction is short circuited, gradually increase their diet list, their digestion and assimilation improve, and in a few months have exchanged a condition of chronic

invalidism for one of comparative good health. They regain their strength, and their weight generally comes up to their old standard.

In this group I have performed, when practicable, a posterior gastro-enterostomy. The stomach returns to a more nearly normal condition. The gastropnoxis and ectasy gradually lessen and sometimes disappear altogether.

The difficulty of determining definitely after the abdomen is opened whether the mass is malignant or benign has been noted by many operators.



CHRONIC ULCER OF STOMACH WITH ADHESIONS CONSTRICTING DUODENUM.

In two cases I felt quite sure that I had to deal with an inoperable carcinoma. The masses were so hard, there was visible such a degree of puckering and the glandular involvement so general that gastro-enterostomy was performed under the impression that it was the only thing possible. In one of these cases four, and in the other two years have passed and they are still in perfect health. The question of malignancy has been eliminated by time.

A most interesting case was found in the case of an old man 75 years of age, referred to me by Dr. Lafleur. A man of large frame, his general

appearance as he walked in was good. His stomach was largely dilated, its outline visible on inspection. There was no mass to be felt. He said that he had vomited almost everything taken during the past week, the vomitus on one occasion containing food taken 36 hours before. Hydrochloric acid was present in normal quantity, lactic acid was also present. The diagnosis was pyloric ulcer, probably benign with cicatricial narrowing. I found a very small hard contracted pylorus. The opening seemed to be almost occluded. The pylorus was altogether I think a third less in size than the normal. Several isolated glands in the gastro-hepatic, and gastro-colic omenta were enlarged.

The question of malignancy was here of the utmost importance. If malignant the condition was early and suitable for a radical operation. If benign a gastro-enterostomy would be sufficient and much safer. I decided to regard it as malignant because of the narrowing and contracting of the pylorus as a whole. In the simple ulcerations I have found the pylorus normal in size, or thickened locally or enlarged to variable sizes by the building up of fibrous tissue. The man's age was that at which we look for malignant growth. I excised $\frac{1}{2}$ inches of duodenum together with about 6 inches of the stomach, closed the stomach and inserted the cut end of the duodenum into a new opening made for the purpose in the posterior wall. The man made a very smooth recovery. There was no vomiting and when he left the hospital he was on full diet, eating 3 good meals a day. Now the point in this case of greatest interest in the Pathologist's report. He found the hard cicatricial mass malignant and in the excised portion of the stomach near the pylorus were 6 or 8 simple gastric ulcers. It seems fair to assume that in this specimen we have an instance of a benign gastric ulcer changing its character and becoming malignant. When last heard from about a year after operation the man was quite well.

GASTRIC SYPHILIS.

Gastric syphilis is a rare condition and its diagnosis exceeding difficult, possibly always doubtful. The following case is of exceptional interest because it was observed intra-vitam and because the patient made a perfect and lasting recovery.

The man was thirty-nine years of age, single and had indisputable clinical evidence of antecedent luetic infection.

The case was reported before the Association of American Physicians by Dr. Lafleur, with whom I saw the case several times before operating. For a full report I refer you to the Transactions of the Association of

American Physicians, and will give you only a synopsis of the findings. Operation was undertaken for the relief of gastric distress, nausea, occasional vomiting and diarrhoea, not alleviated by restriction of diet, lavage or drugs.

The stomach wall thick, about 1 c.m., in places $1\frac{1}{2}$ c.m.; very little bleeding, muscular tissue showed complete denudation of the mucosa over an area extending completely around the stomach at the pyloric end of the incision. The same condition extended along the interior and anterior aspect of the stomach toward the cardiac end of the organ fully four inches. Here and there, especially toward the margin of the bared surface, there were small islets of mucous membrane having a rough cockscorn appearance and a purplish tint. The edges of the ulcerated area are well defined, serpiginous in outline and abrupt. The edge was slightly heaped up and undermined and just in the undermining angle was a whitish line. The surface of the ulcerated and denuded area was rather smooth (neither caseous nor necrosing) of a pinkish red colour and almost bloodless. In the thickened area some cicatrization and contracture had occurred, producing a certain degree of hour-glass contracture, two or three inches from the pylorus. A slice of mucous membrane, a section through the muscular wall and mucosa and a stripping from the edge of the ulcer were taken for microscopical examination. After extending the wound to give sufficient space the exuberant edges of the ulcer were pared, the base was curetted, and the thermo-cautery lightly applied to as much of the ulcerated surface as could be reached, the very slight bleeding following curettage being easily checked by the same means. The gastric and abdominal wounds were then closed by suture.

The tissues removed were examined by Dr. P. G. Wooley, who reported as follows:—"The tissue from the base suggested malignancy, for there were small masses of epithelial cells surrounded by a fibrous stroma; but the edges of the ulcer were simply fibrous tissue and muscle, the former in excess and there was no marked infiltration. The base was markedly inflammatory and not malignant."

That the condition was not one of *ulcus simplex* of unusual dimensions such as have been reported in medical literature, from time to time may be difficult to prove. Dr. Lafleur, however, reports that the man was not a chronic dyspeptic and that anacidity and not hyperacidity existed from the onset of the illness. The chief argument is drawn from the anatomic character of the lesion. Histologically the tissue removed bore a close resemblance to those in the case reported by Dr.

Flaxner as gastric syphilis, in Vol. XIII of the Transactions of the Association of American Physicians.

It is over three years since the operation was performed. During this period he has been in perfect health, weight up to his standard and no indigestion.

This diagram (see page 383) is intended to show you the result of ulcer of the posterior wall of the stomach with adhesion of the duodenum.

The patient a male, aet. 53 was transferred from Dr. Finley's ward in the Montreal General Hospital on the 25th of February, 1905. His stomach symptoms began 10 years before. The pain and vomiting after meals had gradually increased in frequency and severity. During the past 14 years has lost 51 lbs. in weight, 25 of which were lost during the past year. Has occasionally suffered from what he calls distension, which would be somewhat relieved by belching gas.

Heart normal, pulse regular and of low tension; arteries palpable and sclerosed.

Blood cells. Red cells..	5,810,000
White..	12,800
H. globin	65

Examination of stomach contents after a test meal: no free Hcl., lactic and butyric present and retention of solids and fluids.

Right kidney freely moveable and easily palpated.

On opening the abdomen I at first thought that I had to deal with an hour-glass stomach. On examination I found, however, that the central constriction was the pylorus considerably dilated, and that distal to the pylorus was the duodenum dilated to fully the size of a normal transverse colon. Below the meso-colon the jejunum appeared normal. Nothing unusual could be seen or felt on the anterior wall of the stomach, but on depressing the anterior wall I came upon a deep, cup-like round, smooth depression on the posterior wall, into which I could easily insert the end of my thumb. It was the size of a child's teacup. It lay apparently right over the aorta. An obstruction at the end of the third or fourth part of the duodenum was evident. That the obstruction was due to the involvement of the duodenum in the mass of cicatricial tissue behind the stomach and secondary to the gastric ulcer seemed equally obvious. The remedy clearly lay in a gastro-jejunostomy. I opened the meso-colon but found that so nearly the whole posterior wall of the stomach was involved in the cicatricial mass that a posterior G. E. was out of the question. I therefore closed the opening in the meso-colon and did an anterior gastro-jejunostomy and an entero-enteros-

tomy. The patient made a perfect recovery. He left the hospital on the 24th May, having gained 34 lbs. in weight since the operation. He could take full meals without any pain, nausea or distension. An enlarged mesenteric gland removed for examination showed very slight inflammatory change, and no evidence of malignancy.

These different groups of cases illustrate the variety of benign lesions requiring surgical relief, and the variety of surgical procedure indicated. There was no death in the series.

LATERAL CURVATURE OF THE SPINE.

BY

F. W. HARVEY, B.A., M.D.

Medical Director of Physical Training, McGill University.

Lateral Curvature of the Spine is one of the commonest and most neglected of the acquired deformities. If the uncovered back of growing children were systematically examined a much larger percentage of cases of scoliosis would be found than is generally supposed. In looking over the examination records of college students, I found 39 cases of lateral curvature among a total of 1046 or about 4 per cent. Only those students who took part in athletic contests were examined. No doubt if all students were examined a higher percentage of cases of curvature would be found.

For the sake of convenience lateral curvature has been divided clinically into three classes. First is the so-called Curvature, when one may observe a one-sided bearing, undue elevation of a shoulder, or prominence of one hip, causing a lack of symmetry in the waist out-line. Often a distinct lateral curve of the spine is not apparent. In this class of curvature the spine is easily made straight in lying and hanging position. In curvatures of the second class there is a second compensatory curve added, so that the spine becomes S shaped. Here the spine can only be partially straightened. In the third class extension bony change has taken place. The curvature becomes fixed, and little or no improvement can be expected by treatment.

The prognosis then depends on the degree of the curvature. Success in treatment is determined largely by the degree of mobility of the spine. In scoliosis of the first degree we may expect a cure; in the second class improvement, whilst in the third our treatment must be largely directed to relieve symptoms.

As one can never predict in a given case whether the curve will progress or remain stationary it is of the greatest importance to undertake treatment as early as possible.

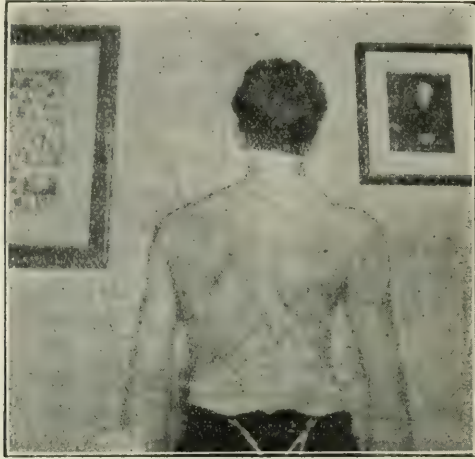


FIG. I.

The first case which I wish to report is that of a youth of 17 who came to me in August 1905, with lateral curvature, first noticed one year previous. (Figure I.) Since that time until I saw him the curvature had

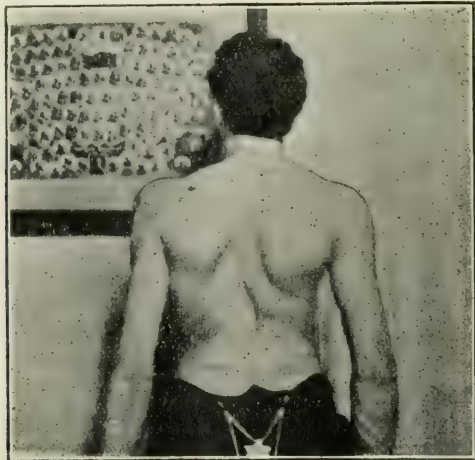


FIG. II.

rapidly progressed, so that even without removal of his clothing deformity was quite apparent, a well marked hump being observed in the region of the scapula. As a child he was delicate, poorly nourished and under-

sized, but during the last few years he has grown rapidly, and at the time of the examination was found to be well-developed for his age, well nourished, and fairly muscular. He presented a very faulty standing and sitting posture, the head drooping forward with round shoulders, left scapula winged and higher than the right. The spine presented a well marked S curve, the primary curve being in the dorsal region with its convexity to the left, this being an unusual form of curvature, as we generally find the dorsal convexity of the curve directed to the right. A secondary curve was seen in the lumbar region with convexity to the right.

The lateral deviation of the spine measured at the level of the 7th dorsal spinous process was $17\frac{1}{8}$ inches. The measurement was taken by measuring from the tip of the 7th dorsal spine, horizontally, to a straight line joining the 1st dorsal and last lumbar spinous processes. Marked rotation of the vertebrae was noticed by increased convexity of the ribs in the region of the left scapula, whilst on the concave side of the curve the ribs were flattened. Thus we have here a case of scoliosis pretty well advanced, in which a considerable amount of bony change has taken place, with not only a crooked spine but deformity of the chest as well. No effort of the patient with or without assistance with pressure, counter pressure and suspension could overcome the deformity, although in certain positions with pressure over the gibbosity the curve was somewhat diminished.

In undertaking treatment of a case so far advanced as this one I could at least hope to arrest the progress of the disease, and possibly obtain some improvement.

During the first month of treatment there was no perceptible change in the patient's condition apart from increased development of the dorsal muscles. Then for a period of three months there was noticed a gradual improvement. The spine became straighter and more flexible. Measurements after four months of treatment showed the lateral deviation of the spine to have diminished by one inch. Since then the measurements have varied from three-quarters to an inch and a quarter, and it is doubtful if much more can be done than to maintain the benefit already gained. I have given an account of this case with some detail as I think it illustrates fairly well the conditions that are found in a case of scoliosis that is allowed to progress to a state where marked alteration of bone tissue has taken place.

In the photographs we can get only an approximate idea of the extent of the deformity. Photography is by no means satisfactory but when

taken along with measurements is probably as suitable as any other method for recording cases.

The second case is a young lady of nineteen years, who had complained



FIG. III.

of pain in the back and over the right hip for upwards of a year. Examination revealed a curve of the spine in the lumbar region with convexity to the left, with a slight compensating or secondary curve in the

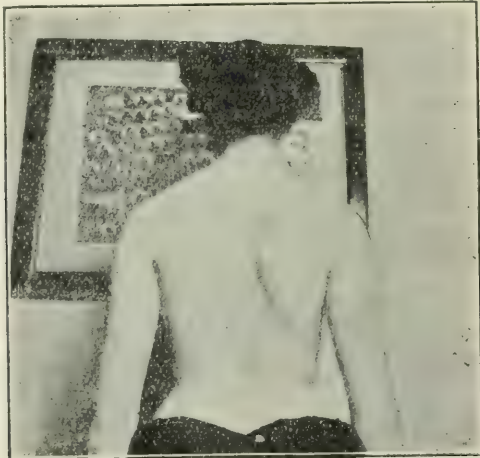


FIG. IV.

dorsal region with convexity to the right. There was marked prominence of the right hip, and the right iliac crest was found on measurement to be $1\frac{3}{4}$ inches higher than the left. Here we have an

illustration of a static scoliosis, and the treatment of such cases is satisfactory and simple. The sole of the left shoe was built up, so as to make the hip level, and after appropriate exercises had been carried out for a short period the lateral curve in the spine disappeared. With the correction of the curvature the pain in the back and over the right hip ceased, and the outline of the waist and hips became symmetrical.

Treatment by gymnastic methods with little or no apparatus was carried out in these cases. The gymnastic treatment of scoliosis has been employed for a long time but never before, has its value been as much recognized as at the present day. To obtain the best results daily exercises should be given which may be necessary to extend over a period of several months. By a proper gymnastic course of treatment the muscles which support and move the spine are acted upon in such a way that the curvature gradually disappears. The contracted muscles on the concave side of the curvature become stretched and lengthened, whilst those on the side of the convexity are strengthened and shortened. After a careful examination one may determine what group of muscles are to be acted upon, and what movements are best suited to overcome the curvature.

Powerful groups of muscles may be brought into action in our attempt to straighten the spine such as the erector spinæ latissimus dorsi, the psoas, the spino-humeral group and the abdominal muscles.

In many cases of lateral curvatures there is a general weakened state of the constitution, when other hygienic measures should be combined with the gymnastics,—so that in our treatment of a case of scoliosis we may obtain not only a correction of the spinal deformity, but a marked improvement in the patient's general health.

HYPERÆMIE ALS HEILMITTEL.

BY

PROFESSOR DR. AUGUST BIER, in Bonn.

As described in a letter from F. S. Patch, M.A., M.D. Formerly Resident Medical Officer in the Montreal General Hospital.

Tuberculosis was the first disease which Bier treated by hyperæmia. For it passive hyperæmia is especially adapted (i.e. *stauungsbinde* compression bandage); indeed, active hyperæmia is injurious.

Bier was directed to the use of hyperæmia as an agent against tuberculosis by the observations of Farre and Travers (1815), Louis (1826), and Frerichs (1853), on the noticeable coincidence of pulmonary stenosis and pulmonary tuberculosis, and the presumption that the latter was due to the pulmonary anæmia resulting from the lesion.

The contrary proposition was stated by Rokitansky (1838) namely, the absence of tuberculosis, and especially of pulmonary tuberculosis in heart lesions and in spinal curvatures (?), in both of which a hyperæmia of the lungs is present.

These assertions have been confirmed and disputed by a great number of writers then and since, the majority being in full accord, however. They gave Bier the impetus to adopt the principle in a single disease, i.e. local tuberculosis, and his results have been so successful as to make him extend the practice to other diseases.

Bier's first communication was made in 1892, 1894 and again in 1895. From that time on, up to the appearance of the first edition in 1903 of his "Hyperæmie als Heilmittel" and he busied himself with the perfection and simplification of the stauung hyperæmie technique, for its improper use can do great harm. During this time his methods underwent great changes and he states at some length the development of his present technique.

Although at first he had used the stauungsbinde only one or several hours daily, he soon went to the opposite extreme and made the hyperæmia a continuous one, changing the position of the band once or twice daily, in order to avoid pressure sores, and removing the band weekly to remove resulting oedema and to make comparisons on progress of treatment. The results were very variable; successes and failures alternating. In most of the cases he was able to report conspicuous cures. But he was forced to note some very unpleasant results. The most frequent complication was the rapid formation of cold abscesses. These he treated with puncture and iodoform injections and thought the combination of stauung and iodoform injection a happy one. Since then he has changed his mind completely. Secondly, he noted the formation of exuberant masses of granulation tissue, in abscesses and fistulas or sinuses, and under the skin in cases of unbroken tuberculosis. Sometimes this granulation tissue disappeared under the stauung, but more often necessitated surgical operation. The worst result was the occurrence of acute inflammations, "hot" abscesses, lymphangitis and adenitis, erysipelas and dermatitis and even general sepsis and death; these, however, in cases of severe tuberculosis. While such occurrences could at times be attributed to faulty technique, further observation showed the long continued stauung to be at fault.

A review of his cases showed his best results to be attained in tuberculosis of shoulder joint and testicle where the stauung was of necessity of short duration, at the most of 12 hours daily, on account of danger of pressure and inability to change the place of stauung. A further

comparison of cases showed his best results to have been attained in his earliest years when the stauung was daily of short duration.

He further noted that chronic oedema hinders the attaining of hyperæmia and favours acute inflammation.

So then the stauung was used for shorter periods and with longer pauses, and as the cases improved thereby, the pauses lengthened till in conclusion only one hour daily of stauung hyperæmie was needed. His observations caused him to give the following advice:

1. The stauung *must never cause pain*, else it is falsely used, or the case is not suitable for this treatment.

2. The stauung *must never be cold*, i.e. it must not make the skin temperature appreciably lower than that of the other limb.

For the first the patient's word must be taken, and for the second constant foresight is necessary.

(Here may I be allowed to interpolate. Bier states on every possible occasion, and it is drilled into his assistants, etc., that a stauungsbinde is improperly applied if it causes the least pain or paræsthetic sensation. Bier, not a little indignant at the apathy which surgeons and medical men in general have shown towards his method, attributes the bad results where it was used to the fact that the stauungsbinde was too tightly applied. "If it causes pain it is wrong and must be loosened.")

So he came to use the stauung at first 7 to 12 hours daily, gradually decreasing this till after some weeks or months, only one hour daily. Oedema occurred only at first, removed in pauses by elevation of the limb. Under this treatment he obtained good results and found that cold abscesses were not more frequent than in other forms of treatment. With time, he came to adopt his present course, that is, one hour daily stauung.

This briefly consists in the application above the joint of a flexible rubber bandage (such as our football men wear round sprained joints) put on in several layers, so that peripherally to it a strong venous hyperæmia ensues. It need not be put on immediately above the joint, as in foot or wrist, but may be applied on thigh or upper arm, if this be required. "The 'Binde' shall under no circumstances cause pain." The skin must remain warm and red and the pulse peripherally must be plainly felt. It is not necessary to bandage the part of the limb peripheral to the joint. The Binde shall remain applied daily one hour, at the most three hours. Always avoid a chronic oedema: if present, combat this by elevation of the limb in the intervals. In cases of "broken out" tuberculosis loosen the bandages over sinuses, etc., so as to allow the hyperæmia space to work in.

Complicated bandages in broken out tuberculosis he does not use, and antiseptics never; tamponade is injurious. If cold abscess form as they frequently do in the process of stauung hyperæmia open with a small incision and squeeze out the pus. He never uses iodoform injections here. He advises rigid asepsis and local anæsthesia in this operation of puncture of cold abscesses. Lately, as he describes later, and as I have noticed, the use of his cupping apparatus (saugapparate) Schroppkopfe and Saugapparate is more popular in his clinic. With these pus and caseous matter are drawn out of the incisions and fistulas. If these cupping glasses are not used, the opening must not be allowed to close up and the pus when it recollects must be squeezed out. He holds that curetting and probing of sinuses is unnecessary, leading to secondary infections. "Cold abscesses must early be recognized and early opened."

No distinction is made between closed and open tuberculosis and they are both handled at first, conservatively, i.e. with stauung hyperæmie. The contra-indications are:

1. Beginning amyloid disease and severe phthisis, which call for amputation.

2. Cases where the whole joint cavity is filled with pus or cold abscesses.

3. Faulty positions of the joint.

The last two are met with especially in the knee joint. (The knee joint he finds difficult, and he speaks of his good results in hand, foot, elbow and shoulder joint tuberculosis. The hip I do not remember having seen mentioned, and I judge is not amenable to the stauung treatment.

He holds it wrong to divide cases into those to be treated conservatively, resection and amputation cases, as often the former go badly and the latter well under conservative treatment.

He treats all ages alike and has seen excellent results in open tuberculosis in frail old people.

The formation of cold abscess is not an aggravation of the disease but only a necessary phase in the course of tuberculosis and does not necessitate interruption of stauung.

Iodoform is only used now in Hydrops Tuberculosis, and where the whole joint cavity is filled with a cold abscess. When this has lessened he uses stauung which is not suited for the case at first.

Bier does not practice immobilization of the joint but allows the patient with hand, elbow, or shoulder tuberculosis, to carry hand or arm in a sling and to perform all the little requirements of daily life that pain permits. He carefully also begins passive and active movements.

Under the stauung hyperämie, the pain is usually so greatly lessened as to permit such movements. He keeps always in view the attainment of a functioning joint; holds it a bad result when a stiff joint is the end of tedious and immobilizing treatment. He agrees with Thomas of Liverpool that dorsal flexion of the wrist is better than palmar flexion.

In the case of knee or foot tuberculosis he uses a plaster or leather splint in two pieces, removable, which is worn whenever the patient stands on the leg. Passive and active movements are daily frequently performed, whenever the patient lies down. When splints or apparatus are worn, they are given up entirely very gradually, by crutch, stick, etc. Great precautions are taken to guard against injuries of the joint and children are not allowed to fall.

Severe foot tuberculosis is treated at first in bed and precautions are taken to avoid foot-drop, etc. by the use of splints. Splints or extension apparatus are used in the case of tuberculosis of the upper extremity where bad positions of the joint are present, but care must be taken not to leave splints on continuously in order to avoid stiffening of the joint.

Great use is made of the polyclinic treatment of tuberculosis. The great feature in Bonn is the ambulatory treatment. This is of great advantage to general physicians who can treat these patients in office hours so as to observe progress or can instruct patients or parents how to carry out the stauung at home, but great care must be taken, as to any change, e.g. cold abscess formation.

Bier gives statistics of cases which he treated in Bonn, from April 1st, 1903 to August 1st, 1904. During this time the technique was practically uniform. Previously he had had successes but the treatment was not then uniformly stauung. The cases were not selected, except in the case of the knee joint; only those cases where the treatment lasted at least nine months were noted (except those I presume which healed earlier.) The cases were treated only with stauung hyperämie except for the aid of apparatus in the case of the lower extremity.

Hand and wrist: 17 cases were treated; four had from the beginning sinuses; in five abscesses had to be evacuated, and 15 healed with free movement; two improved. The average length of treatment was twelve months.

Elbow:—Treated 11 cases; five had sinuses at the beginning; abscesses were opened in eight; eight cases healed including two of the sinus cases. Absolutely normal movement was attained in no case, but fairly free movement in all; three were improved. The average length of treatment was nine months.

Foot:—13 cases were treated, eight with sinuses; abscesses were opened

in six; eight healed, including four of the sinus cases, three improved; one uninfluenced; one amputated later outside the clinic. Full movement was attained in three cases, satisfactory in the remainder. The average treatment was ten months.

Shoulder:—One case was treated which healed with free movement.

Knee:—Treated five cases; three had sinuses, two at the beginning and one developed; three were healed, two with good movement one with stiffening in good position; two cases were improved, both ankylosed. In eight other cases resection was almost immediately performed.

The knee joint is somewhat refractory to stauung and frequently heal with ankylosis. "A good function is, however, the chiefest object of conservative treatment."

Healing ensued in,

the hand in.	.88	per cent. of cases (not selected)		
elbow	.72.7	"	"	"
foot.	.61.5	"	"	"

In these joints not a single resection was carried out.

Till very lately Bier's results have not been confirmed by other surgeons, the reason he finds chiefly in the improper use of the method. He goes on to remark (and rightly) that Klapp has had such success with the saugtherapy (the production of more or less vacuum by cupping glasses) which Bier had given up, that now practically all tuberculous cases with abscess and sinuses are treated solely by saugtherapy.

Technique:—Small or large saug glasses are applied to the part and the air slightly and gently exhausted, by rubber ball or pump. The treatment lasts daily for three quarters of an hour, five minutes on and three minutes pause. The glasses must be treated antiseptically, the part washed or sponged with benzine (cheaper than ether). Should new abscesses form they should be opened antiseptically with a small incision and sauged. Do not probe, curette, drain, or tampon. An antiseptic bandage is applied. This applies to all forms of tuberculosis, joint, gland and bone.

Secondary infection is not seen (this is striking). As in the stauung joints are moved and not immobilized. Pain is apparently not present from the treatment, resulting from the Analgesic action of the hyperæmia. (I have seen in the last three days two cases of elbow tuberculosis with abscess discharged cured, with almost perfect movement.)

At present, this being in the experimental stage, saug glasses are used alone. Bier asks whether or not its use along with stauung would be better?

The forms of saug glasses are two:

Saug or cupping glasses of various shapes and forms modified to suit various parts.

2. A larger apparatus with a rubber cup exhausted with a pump and a cuff. (Especially useful in spina ventosa.)

The cuff is of leather or cloth and is bound to the arm loosely with stauungsbinde, but should not cause stauung. This latter form is used where cupping glasses could not be applied.

TREATMENT OF OTHER FORMS OF TUBERCULOSIS.

Testicle:—Stauung hyperämie. Soft rubber tube, wool underneath one to three hours daily. Rather strong hyperämia but should not cause pain.

One or both testicles may be treated at the same time. In the interval, they should be supported in a roomy suspensory bandage.

Cold abscesses should be opened through a small incision. The results are good in early cases, but not so satisfactory when the seminal vesicles are involved.

BONE, TENDON SHEATHS, GLANDS, SKIN, LUPUS.

Hygromata:—Through a small incision, the fluid and rice bodies, should be evacuated, and then the stauungsbinde applied one to two hours daily. (Better results may be obtained with Klapp's saug therapy; have seen two or three cases of these chronic tuberculous teno-synovitis cases heal. Saug daily for three quarters of an hour).

Bone:—Where function will not be impaired advises operative interference. (Spina ventosa of children gives excellent results with saug-therapy as Klapp shows with numerous cases).

Gland:—The cubital gland is the only one suited for stauung (Klapp treats it with sauging; which is quickly followed by softening. A small incision is then made and the saug glass applied. He uses small saug glasses three quarters of an hour daily.

The method does not seem to be adapted to lupus, although the Finse's rays act by hyperæmization).

TREATMENT OF ACUTE INFLAMMATIONS AND PUS INFILTRATIONS OF EXTREMITIES WITH STAUUNG.

Stauung in acute infections is used contrary to the rule in tuberculosis, 20 to 22 hours daily. During the two to four hour pauses, oedema

is lessened by elevation of the part; it is generally shown that a shorter period is insufficient.

If possible apply the stauungsbinde in a different place each time. Where this is impossible make short pauses, and wash part with alcohol.

The stauung should never cause pain; it ought to still pain if that be previously present. If the pain is increased loosen the stauungsbinde.

Abscesses should be opened through a small incision.

The presence of lymphangitis is not prohibitive. The band may be placed without fear over the lymphangitis streaks.

Change the place of application of the stauungsbinde frequently to avoid undue pressure.

To avoid mistakes and bad results which will occur when one is unskilled in the method treat only at first the cases with good prognoses, for there are and will be cases so severe as to lead to a fatal result or amputation, even under stauung's hyperæmie, and people are only too willing to attribute such bad results to a new method. The following conditions are adapted to this form of treatment: (1) All fresh cases of acute inflammation; (2) Subacute and mild inflammations; and (3) Gonorrhœal, pyæmic and acute pus joints. Results have been especially good in suppurative tendon sheath inflammations. The pain is removed and returns in the pauses.

In acute arthritides and in the acute suppurative teno-synovitides, thorough movements of the parts are to be carried out as soon as lessening of pain permits. This gives a good function the attainment of which we have previously neglected in our wish to save limb and life.

In tuberculosis the treatment should be of short duration and without œdema.

In acute inflammations the treatments are longer (but during the pauses, the œdema is lessened by elevation of the part.

Bier cites cases of suppression of beginning suppuration by stauung hyperæmie, changing of hot abscesses into cold, disappearance of abscesses, etc.

In regard to the last point it is not the rule to wait for such an event, on the contrary, *abscesses are under all circumstances to be opened.*

Bier advises small incisions as less disfiguring and scar forming, but a long incision is not incompatible with the treatment.

Abscesses are only exceptionally drained and never tamponed. Pus must be carefully pressed or stroked out. The result, especially in acute suppurative teno-synovitis, is striking. Death of the tendon does not ensue.

Bier cites a number of acute inflammatory cases where temperature subsided immediately after applying the stauungsbinde.

TREATMENT. OF ACUTE AND SUBACUTE INFLAMED JOINTS WITH STAUUNGSBINDE.

The pain is considerably lessened, and allows, to the great astonishment of the patient, careful passive movements to be carried out, and allows sleep (this is the chief thing if we wish to avoid ankylosis.)

It is especially useful in gonorrhœal inflammations. To avoid ankylosis "*Begin at once with active and passive movements as soon as pain allows.*"

Chronic gonorrhœal stiffened joints are best treated with hot air.

Excellent results are being attained, in mastitis especially; the pain stilling action of the hyperæmia is marked.

Hot air is used extensively in the clinic.

One of the charges against the method is that it causes, especially in tuberculosis, a diffusion of the disease. This, Mosetig claimed recently in a discussion in Vienna. Von Eiselsberg and all the other surgeons who spoke were strongly in favour of stauung, etc., and Bier denies the truth of the assertion. Time will tell who is right.

MONTREAL DISPENSARY.

The total number of applicants during the past twelve months was 19,195, sub-divided as follows, according to diseases:—General diseases, 9,077; diseases of eye and ear, 2,366; diseases of women, 1,333; diseases of nose and throat, 671; diseases of skin, 2,771; diseases of children, 2,827; dentistry cases, 210.

MONTREAL GENERAL HOSPITAL.

During the three months ended March 31, 751 patients had been treated to a conclusion. There were 52 deaths, of which 15 occurred within three days of admission, making the mortality for ordinary hospital cases 4.92 per cent. The aggregate number of hospital days was 18,610, an aggregate detention per patient of 24.78 day, the average number of patients per day being 206. In the outdoor department there were 11,928 consultations, as compared with 11,256 for the corresponding quarter of last year. During the three months the ambulance responded to 327 calls.

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EHRlich's RESULTS IN CANCER RESEARCH.

It is gratifying that the first actual step of magnitude in the discovery of a means of obtaining immunity against cancer and perhaps of curing early cases of the disease has been published to the medical world through other means than the lay press. Ehrlich has been able to immunise animals against inoculation with cancerous material of so great virulence that practically all non-immunised animals inoculated, contracted the disease. The cure of cancer in these animals is all but in his grasp; and we can by analogy, expect speedily an application of his method to human beings. In a matter like this, we must guard against too great a measure of hopefulness, but we can truthfully say that this seems the most important result yet obtained in the world in cancer research.

Professor Adami, now in Germany, has kindly put at our disposal a resumé of Ehrlich's article, which we publish with the belief that it will prove most acceptable to our readers.

SUBSTITUTION AT EXAMINATIONS.

The last meeting of the College of physicians and surgeons of the province of Quebec was held on September 27th, 1905. The report of the proceedings of that meeting reached the members in May, 1906. The attendance appears to have been large, as the names of forty delegates are given as having answered "the nominal call." If this large representation was only nominally present, we think the fact should have been stated more explicitly. The copy of the report which is before us is in English; but the translator has been led into error by relying too absolutely upon the dictionary. The committee on credentials, called the "trust committee," appear to have had more than the usual trouble with applicants for examination at irregular times, and we are glad to read the curt comment "refused; he will have to wait till the ordinary epoch."

That portion of the report which deals with substitution at examinations makes painful reading, but the College is resolute to put a stop to the practice, as "the Committee recommends that the Medical Board gives instruction to the President and Registrary to make all legal researches to bring before the Courts of Justice all persons who, at the last examination or at previous ones, are found guilty of a fraudulent conduct." Mr. Laflamme, for the examiners, in the report which he made, took a gloomy view of the situation, and confirms the evidence adduced before the police magistrate. We quote from his report. "It will show you, that some candidates, at the last examination seem to have acted dishonestly. There has certainly been an attempt to fraud. Is it possible to believe that the same thing will again take place at the future examinations? It is to be feared, so far as the remedy is hard to find. This time, we have been able to find out some one guilty of substitution of persons. But the manner we proceeded is actually known and the pupils will be skilful enough to elude it in the future. At least, we will not give to M.A. a license that M.B. will have won, for money received. If the Governors' Board does not find a remedy to this evil, in the future, the preliminary examination will be regarded as a farce for the simple only. In this case, it would be better to suppress it. We, examiners, we exercise the most careful watch; we do our best to get all possible information, but we must confess we will be unable to discover certain irregularities if the past way of doing is not changed."

Then follows a specific account of the offence which had been attempted. "A candidate was noticed clearly to be disguised. False mustache and imperial; false *rouge*, etc. He met one of the examiners in the street later (without the disguise), admitted the fact, and gave an account of his antecedent (which probably was not true); that he did it this time because of his need of money."

No measures can be too strong for eliminating this pernicious practice. Unless the examinations are above reproach they will in truth come to be "regarded as a farce for the simple only."

PRACTICE IN MONTREAL.

The unloveliness of Montreal in its seasons of squalor—late winter, early spring, midsummer and late autumn—falls with especial hardship upon the members of the medical profession. In common with all other members of the community they suffer from the unpleasantness of their surroundings, and in addition their livelihood is taken away. With increasing wealth and facilities for transportation it has become easy for the average citizen to change his environment, and he will not endure discomfort when escape is so easy. The result is that the well-to-do population of Montreal is continually on the move.

Late in June the migration to the mountains and the sea has begun. The ships which leave the docks in increasing numbers are provided with comforts and luxuries unthought of ten years ago, and help the exodus forward to Europe. During July and August the resident district of Montreal is a deserted city of houses closed by day and lightless by night. With September there is a return to home and school; but by November the population is on the move again, to the South or to Europe from which many persons neglect to return till the following summer. Next there is the Christmas exodus, and again at Easter, when the railways are hard put to it to provide transport for those who desire to escape.

People do not travel for pleasure. Within certain limits they would rather endure the ills they have, than fly to others which are equally certain, the train's delay, the black man's contumely, and all the usual discomfort which are experienced away from home. They make choice of two evils and leave Montreal.

The physicians are left behind without patients, or at least with only those of their *clientelage* who are in the like situation with themselves, and unable to get away. The result is that, with increasing wealth, Montreal is becoming a less desirable place for practice. In time this will tell upon the hospitals and medical schools as well as in private life. Physicians are like other human beings. They will not forever submit to starvation, and discomfort at the same time.

This state of affairs is unnecessary. There is probably no city in America which in itself is so good to live in for twelve months in the year as Montreal. With mountains, rivers and lakes it has advantages which no other city can claim, and yet it is deserted by its own citizens

and avoided by strangers. It is true that the habit of migration is growing generally, but the movement in Montreal is not reciprocal. People are forever going, but others do not come to take their places. The loss to the community, as well as to the physicians, is incalculable, and millions which are spent in foreign capitals might as well be spent at home.

It is the condition of the streets alone which makes Montreal a less desirable place of residence than it should be. The first business of a civilized government is to make life and property secure, to provide water and roads. A man may refrain from drinking water. He may endure being robbed or murdered. What makes life unendurable here or anywhere else is to get dust in his eyes and mud upon his boots. One of these two evils at a time he could bear. Both at once are contrary to nature and intolerable.

It is not lack of money which has brought about this condition. One has only to look at the civic debt to know how much has already been spent. What has become of the "permanent pavements" upon the cost of which citizens are yet paying interest? Many of them have floated away in the spring rains. It is because money has been spent and spent ignorantly that the streets are so bad. It would be better to leave them in a state of nature, than heap them up with material which soon blows away in dust or is carried away as mud.

When the residents of Peel street, in foolish desperation, bound themselves legally to pay for one half the cost of a roadway, the city officials were candid enough to confess that the money would be wasted, as they did not know how to construct a roadway which would endure. Before succumbing to the blind force of nature, it would be well to seek further advice, even if one had to consult the authorities at Ottawa or Longueuil.

It is the business of the medical profession to provide for the health and comfort of the citizens, to do for "business men" what they will not do for themselves. We have rid the world of many pestilences. The time has come to take other matters in hand. The streets of Montreal have been too long a bad jest. They have driven away our patients, and with us all others who minister to the public are bound to suffer.

The *New York Medical Journal* conducts a series of discussions by readers upon subjects of interest. Prizes are given for the best answers to such questions as: How do you treat lumbago? What is the best form of tent for tubercular patients? How do you treat prolapse of the umbilical cord? Over fifty subjects have already been dealt with

and many new views have been obtained. There is a standing notice that "no importance whatever will be attached to literary style." If by "literary style" is meant hifalutin language, we can well understand the resolution of the editors, as there are many persons who are incapable of composition in that form. Our own impression is that, if a person has a thing in mind which is worth saying, and he writes it down clearly in fitting words, then he is writing in good style. It is a pity that such composition should be put under the ban.

The correspondent of the Canada Lancet writes that some important changes in the by-laws governing the Sherbrooke Protestant Hospital have come into force. Henceforth any physician in the city or district may take patients to the hospital and treat and attend them, with the liberty of using the operating room, if operation is necessary. Hitherto patients, taken to the institution by physicians, not on the attending staff, had to be handed over to one of the staff physicians. This staff has been increased from six to eight, and, in case of major operations, a member of this staff must always be present. Other changes have been made in relation to government, and the control of all matters in connexion with the hospital is placed entirely in the hands of the executive and governors.

The third Congress of the French-speaking physicians of North America will be held on June 26-28 at Three Rivers. The invitations already extended for the meeting state that special attention will be paid to alcoholism, the hygiene of the infant, and tuberculosis. The programme indicates that arrangements have been made to entertain the visiting physicians, not only at Three Rivers, but also by a trip to Shawinigan Falls, and a large attendance is expected. Dr. J. E. Dubé, of Montreal, is a vice-president of the Executive Committee, the president is Dr. L. P. Normand, of Three Rivers, and the secretary, Dr. Charles DeBlois, of Three Rivers.

In the obituary notices of medical men in Ontario, which are all too common, we read habitually that the deceased was an ardent Liberal, or a life-long Conservative. In an address to the medical students of Toronto, Dr. Fotheringham advised them "to join some political party." We do not think this the best advice, especially if we can believe all we read of the political parties which are found in Ontario.

Members of the medical profession will learn with regret that Dr. E. P. Lachapelle has seen his way clear to resign from the superintendency of the Notre Dame Hospital, a position which he has occupied ever since the foundation of the hospital twenty-five years ago. The new building on Sherbrooke street will always remain as a monument to his zeal and tactfulness and to his capacity for organization.

IMMUNISATION AGAINST MALIGNANT GROWTHS.

EHRlich P. Experimentelle Karzinomstudien an Mäusen: *Zeitschr f. arztl. Fortbildung* 3, 1906, No. 7.

At last after all these years of intense study of the cancer problem we are able to chronicle the advance which, all must hope, heralds eventual victory. Much, it is true, remains still to be accomplished, but no one acquainted with modern methods, cytolytic and hæmolytic, and their results, after reading this paper can be otherwise than convinced that Ehrlich has laid the foundations for a successful preventative treatment of cancer, and that, along the same lines, cure of this dread disease, at least in its early stages, is only a matter of time. Many as are the debts which medical science owes to Ehrlich, from his studies upon the chemistry of the cell in relation to staining, and establishment of histological methods upon a sure foundation, through his recognition and classification of the different forms of leucocytes and methods of standardising antitoxins, to the establishment of the side chain theory of immunity with the marvellous impetus this has given to investigation, these last studies impress us as the greatest of all. Briefly Ehrlich has now clearly established a method of immunising against malignant growths in the animals of the laboratory, and that by a natural evolution and application of the principles which have dominated all his previous work. His results are the logical outcome of his studies upon the nature of metabolism and of the side chain theory. There remains now to apply this method to the human being, and to expand it to the arrest of the disease when it has already shown itself, and, by analogy, this is possible. We heard rumour, indeed, in December that certain workers in New York imbued with the same ideas had already achieved a definite measure of success in the treatment of malignant disease. If so, theirs will be the great service and the honour of definitely solving the cancer problem: but the results have still to be published. And in the meantime the experimental basis of the method has been established by Ehrlich.

In the lecture before us, Ehrlich details the stages that have led him to his results. It was evident, judging from bacteriological experience that only by animal research, by the study of the mode of growth and properties of malignant disease in the lowest animals could sure results be obtained, for, in this way in the laboratory, disturbing factors could be largely eliminated, and of animals, as demonstrated by Hanau, Moran, Leo Loeb, Jensen, as again by Borrel and Michaelis, mice and to a less extent rats, offered the best material for study, for in them the growths can be transplanted from generation to generation. The British Committee it will be recalled are working upon exactly the same basis.

But affected rodents are not easy to obtain. Out of 30,000 mice Bashford only gained 12 with tumours, and for a year Ehrlich could not encounter a single case. Eventually, however, during the last year no less than 230 individual cases have been received at the Frankfurt laboratory, an amount far in excess of that at the service of all other investigators combined. It is interesting to note that all the primary developments are in the female mice and originate in the mammary gland. Of these 230 tumours the majority were of the non-malignant adenomatous type, the minority of carcinomatous nature. And what is more, only a small proportion yield positive results on implantation: of 94 implanted, only 11 gave new growths, and that in by no means all the animals inoculated. If from one primary tumour, according to its size, 20 to 30 other mice were inoculated it might be that only one or two, rarely six or seven, gave results.

But once such transplanted material showed growth it was possible in a certain number of cases by successive transplantations through a series of mice to gain a most remarkable augmentation of virulence,—and here was Ehrlich's first important step forward—in this establishment of increased virulence by passage, so that he gained a 'virus' of assured activity. Eventually, with such material, the positive results were close upon 100 per cent, the growth became rapid so that in 10 days he could remove and transplant; the extraordinary mass thus at his disposal may be realized when one mouse in eight days afforded cancer tissue sufficient for the development of tumours in 10 other mice and these in turn were used to set up cancer each in 10 to 15 more mice. In short Ehrlich has already been able to transplant one tumour through 70 generations.

A remarkable side issue has been noted in 3 cases, namely the appearance of sarcoma which in one series of transplantations completely overgrew the original cancer, forming a pure spindle cell sarcoma. We have seen the specimens, and no one can doubt their nature: the second

transplantations still remain mixed, with polymorph cells and indications of epithelial elements, in a third there is definite combination of carcinomatous acini with sarcoma elements. The only explanation so far possible is that in these cases the stroma (provided by the host) in one of the series of animals inoculated, has taken on malignant growth, and these secondary malignant cells are capable of continued growth.

It is evident, however, from Professor Ehrlich's figures that there is a very considerable natural resistance of the mouse at all ages, to what we term natural carcinoma—to first transplantation. Of the last 21 tumours obtained out of 282 mice inoculated, only 2 gave positive results, whereas the results were positive with his material of augmented virulence whether he employed old mice or young, male or female.

We constantly encounter like phenomena with bacteria. Leaving aside the question of primary origin of cancer cells, what are the conditions which favour proliferation? In the first place it is established that tumours are only capable of transplantation into the same or a closely allied species. Thus Ehrlich was able to inoculate rats successfully with his augmented material from the mouse. Here, however, differences show themselves: the cancer only grew for a week or so and then underwent absorption. If replanted into a mouse at the end of the week it again gave positive results, into a rat negative. Just as a smear of hæmorrhagic sputum upon plain agar will give results of the influenza bacillus but further transfers upon like medium are negative, the bacillus only growing where blood is added, so according to Ehrlich is it with these cancer cells: the growth in the rat is due to food material brought with them. Indeed only the outer cells of the inoculated mass grow, the more internal from the first show evidence of necrosis. It is not that the rat's organism contains primarily an antibody, merely that some specific food material is absent.

While this appears to be established, an antibody is developed in the rat by the presence and absorption of the mouse cancer. Inoculate a rat a second time with the same tumour material and from the first all the cells show not a sign of growth, but on the contrary a necrosis. Here we have the first indication of the possibility of gaining immunity.

A similar order of immunity is to be noted in the mouse. It is not a little remarkable in these cases that where the primary growth shows such enormous and rapid development, metastatic growths are rare or if present small and inconsiderable. So also *if a second inoculation of the same order of tumour material be made into a mouse, this second tumour does not develop.* Ehrlich ascribes this to a like using up of the specific nutritive matter by the very active primary growth. We confess

we doubt the validity of the explanation. To us the conditions appear to be parallel with those we notice in syphilis and in tuberculosis, and as there, so here, are best explained by a coincident exaltation of resisting powers and development of antibodies by the tissues away from the growth and not directly involved.

(Vide Adami: "Adaptation and Tuberculosis," *British Medical Journal*, April 29th 1905.)

Ehrlich would explain the active growth of the tumour cells at the beginning as due to the avidity of the cancer cells for certain food stuffs with coincident lowered assimilative capacity of the other cells of the organism for the same, later—very much along the lines of our theory of the habit of growth—he recognizes that there is an increase of avidity and assimilative power to a maximum. If, he suggests, we can find a means of increasing the avidity of the rest of the tissues for these specific food stuffs of the cancer cells and thereby withdraw their source of nutrition then it will be possible to arrest the growth of cancer.

Now already there are, along with many negative, certain positive results upon record regarding immunization against cancer. Thus, notably, Jensen inoculating mice with dead cancer material, saw that small tumours obtained through inoculation underwent atrophy and resorption, and Clowes has noted that mice whose tumours underwent spontaneous resorption afforded an anti-cancerous serum. But the results have not been constant. Ehrlich attributes this to the fact that observers have not been dealing with tumour material of maximal virulence. As Pasteur in the case of bacterial immunity, so in this matter of cancer, Ehrlich emphasizes the fact that no constant results can be obtained until toxic material of maximum virulence has been gained. Such material of maximal virulence he now possesses, able when inoculated to cause cancer in close upon 100 per cent of the cases. His important announcement is that mice inoculated with non-virulent material—with tumour matter, that is, which underwent absorption and not growth, and it will be recalled that the majority of his animals used for primary inoculation come under this category—are in the majority of cases completely immune to subsequent inoculation of material of maximum virulence, and in all cases, a powerful immunizing or retarding effect is observable. He employed animals already in the laboratory at various periods after primary inoculation and has no doubt that subsequent, more precise treatment will afford perfect results.

The immunity shows itself rapidly—in from 7 to 14 days after the primary inoculation and is maintained for weeks and months. He has obtained it repeatedly, "*immer und immer*," during the last year and

with him we must regard the result as "ausserordentlich erfreuliches." He has obtained his most perfect results with mice which did not react with the first inoculation of the cancer tissue from which originated eventually his virulent material.

What is important is that he found that one mouse cancer immunised against all other mouse cancers and, what is more, against mouse sarcoma. The reaction, thus, is not narrowly specific—though evidently from the statement just received, just as we note in bacteriolysis and cytotoxicity, the most powerful result is obtained against the particular strain affording the immunising material. To a moderate extent the animals so immunised were also protected against a mouse chondroma of extreme local malignancy or active growth which Ehrlich is transplanting through a series of animals. Ehrlich correlates this with the frequent presence in the same individual of different forms of tumour to which Albrecht of Munich has called attention, and in Montreal has been emphasized by Nicholls and Woolley. We shall not, however, discuss the subject, interesting as it is, nor yet the explanation of those facts in the terms of the side chain theory, which here gains further corroboration. The all-important point is that active immunity against cancer is shown not merely to be possible but to be gained with precision by a specific method of procedure and that against cancer of maximum virulence. The application of these results in human medicine can only be a matter of time. We see the dawn.

J. G. ADAMI.

Reviews and Notices of Books.

INTERNATIONAL CLINICS.—Edited by A. O. J. KELLY, M.D. Vol I.
Sixteenth series, 1906. J. B. Lippincott Company, Philadelphia.
1906.

This volume of the "clinics" is enriched by a review of the progress of medicine during the past year. There are eight coloured plates, 20 plates in black and white with numerous figures. There are seventeen distinct studies upon subjects of vital importance with which all physicians and surgeons should be acquainted. The "clinics" include a body of sound opinion upon medicine, surgery and their various subdivisions.

HANDBOOK OF SURGERY by GEORGE BURNSIDE BUCHANAN, M.D.
Glasgow. John Currie, Edinburgh, 1906.

This book aims to do for surgery what Walsham's book has done for

medicine; that is to include in small compass sound information well arranged and reasonably complete. We think that it does so, and that it will have a corresponding usefulness to students.

THE INTERNATIONAL MEDICAL ANNUAL, 1906. Thirty-fourth year.
E. B. Treat and Company, New York. Price \$3.00.

We should first make note of the difficulties with which the publishers have had to contend in the issue of the present volume. Their offices were destroyed by fire at a time when the most of the matter was in type and the official who was mainly concerned with issuing the work lost his life in a railway accident. Yet there is no evidence in the book of these difficulties which happily have been surmounted. There are 32 plates and 70 diagrams. Thirty-one contributors have collaborated towards the volume and amongst them are some of the names best known in medicine. The book opens with a review of therapeutic progress for the year, including organo-therapy in which all new drugs and procedures are considered. Radio-activity and electro-therapeutics complete Part 1. The main body of the book is occupied with a dictionary of new treatment alphabetically arranged. The references are singularly copious. The high reputation of the "medical annual" will be enhanced by this volume.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION,
1905. Vol XXI.

The object of this Association is the study of Climatology and hydrology and of diseases of the respiratory and circulatory organs. The present volume contains 18 important papers, and an index of the 21 volumes which the Association has published. Amongst the papers we note one upon the Climatology of the Laurentides by A. D. Blackader. The meeting with which this volume deals was held in Detroit. The next meeting will be in Boston concurrently with that of the American Medical Association.

UNITED STATES PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.
1905.

During the year 57,013 seamen were treated at the various stations of the Service. Of these, 14,661 were treated in hospital and 42,352 were treated as out-patients. The number of days' hospital relief furnished seamen was 431,623, an excess of 16,331 over the number for the previous year. This volume deals with the service in which the above is only a partial indication of the work done.

MANUAL OF CHEMISTRY. By W. Simon, Ph.D., M.D., Eighth edition, 66 illustrations and coloured plates. Lea Brothers and Company, Philadelphia and New York, 1905.

As an example of condensation this book deserves notice. In a space of 600 pages the author covers the subjects of chemical physics, inorganic chemistry, analysis, organic chemistry, and physiological chemistry. In consequence the treatment of the individual subjects is fragmentary. The section on Physics is particularly so, neither giving an insight into the general subject nor treating sufficiently the parts especially interesting to a medical man.

In the section on inorganic chemistry the author does not follow the experimental method of teaching the theoretical part of the subject; the theory is all gathered in the first few pages of the section and is not led up by any extended discussion of particular experiments. In a book of reference this may be justifiable but except possibly in the form of a summary at the close of the discussion is not advisable in an introductory text-book. Students are altogether too apt to neglect the dependence of theory on experiment, for them to be separated in this way. It is not easy to appreciate the reasons for postponing the discussion of the halogens till all the other non-metallic elements have been treated. The discussion of the metals and their compounds is good and the sections on analysis, qualitative, gravimetric, and volumetric, is more complete than is usual in text-books on inorganic chemistry, as the book is intended for use as a laboratory guide. There is a novelty in the use of printing in colours to represent the colours of precipitates, indicators *et. cet* and the colours are well done. The section on physiological chemistry, while necessarily short, is yet satisfactory for an elementary text-book. All the well recognized substances and reactions receive notice.

For those who are already familiar with the book it should be added that this edition (the eighth) differs from the previous one in changes to harmonize with the new Pharmacopœia and in more attention to dental metallurgy. The book is well printed in clear type on good paper.

A Treatise on the Nervous Diseases of Children. By B. SACHS, M.D. Second Ed. revised. New York: William Wood & Co., 1905.

The first edition of this book was received with favour both in America and Europe. It has been translated into German and Italian, and a French translation is now in preparation. The present edition

has been reduced in size by condensation and by the omission of the chapters on anatomy and physiology, while new matter has been introduced whenever required to bring the subject up to date. The general practitioner will find many valuable suggestions in this book, and may have some time honoured traditions rudely upset. For example, the hot bath in convulsions, which is popularly considered indispensable, is deprecated as being a loss of valuable time, and the author says that if a convulsion ends while the child is in the hot bath, it is because the convulsion has run its course. He advocates the inhalation of a few drops of chloroform or equal parts of chloroform and nitrite of amyl, followed by small doses of opium or morphia when the acute stage is over, and the next day by the bromides or chloral. Dr. Sachs has given us a treatise which is both concise and practical.

A REFERENCE HANDBOOK OF THE DISEASES OF CHILDREN. For Students and Practitioners. By PROF. FERDINAND FRUHWALD, of Vienna. Edited, with additions, by THOMPSON S. WESTCOTT, M.D., Associate Professor of Diseases of Children in the University of Pennsylvania. Octavo volume of 553 pages, with 176 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$4.50 net; Half Morocco, \$5.50 net. Canadian Agents, J. A. Carveth & Co., Toronto.

The *Kompendium der Kinderkrankheiten* of Prof. Frühwald, of Vienna, gives a faithful picture of the pediatric therapeutics as practised and taught in that great medical centre. The present work is an excellent translation of the original with such additions and annotations as serve to adapt it to the differences of practice in America. The illustrations are printed from the original German plates, and a few extra plates from American sources have been added. The novelty and at the same time the special value of this treatise are to be found in the alphabetical arrangement, with numerous cross references.

In convulsions the author considers chloral to be the sovereign remedy, administered in doses of 4-8-15 grains according to the age of child, in $1\frac{1}{2}$ oz. of a mucilaginous mixture (a decoction of starch is recommended). The bowel is cleared out by means of an enema of pure water, before the chloral is administered. In order to save valuable time, the physician is advised to carry with him the drugs and appliances necessary for giving the chloral enema, whenever called to see a child in convulsions. The section on artificial feeding is interesting as indicating that less attention is paid on the continent to percentages than in this country. Liebig's malt-milk soup is highly recommended in follicular enteritis and simple atrophy (marasmus). The method of preparing this soup is described.

STUDIES ON THE TREATMENT OF FRACTURES OF THE LIMBS. By PROF. GUERMONPREZ, of Lille, France. Notes collected and set in order by Drs. Guilloux, Eissendeck, Faidherbe, David, Merveille and Platel. Paris, 1906, J. Rousset, Editor. Price 25 francs.

This stately volume of 1550 pages in 8 vo. represents something quite out of the ordinary. That so much could be written upon the details of treatment of fractures of the limbs without materially touching upon etiology, diagnosis, or pathology, is in itself remarkable. At first sight the impression given is that the book suffers from a great deal of repetition, one might almost say padding. This impression, however, is soon corrected by a careful perusal. The book is really a monument to the scientific labours of one man upon one branch of medicine and upon a small part of that branch; a man who, it seems, has founded a true school. The book is a real book, not a manual or a textbook of current ideas. The leading idea in the whole work is the avoidance of any routine treatment of fractures and the necessity of individualizing in each case. Well known and approved methods by means of fixed dressings are upon the whole given a smaller space in the treatment than the newer ideas of massage and mobilization, associated here so particularly with the name of Lucas-Championniere; nevertheless faddism is not apparent. Clinical accuracy is set first and foremost. The older ideas concerning the necessity of making an exact clinical diagnosis before using modern laboratory methods, especially, of course, in this instance the X-rays, is insisted upon. As a surgical school of thought it may be, perhaps, best compared with the school of clinical medicine associated with the name of Trousseau.

The twenty-two chapters are very unequal; many are short and discuss points that are fairly well agreed upon; others are quite extensive and discuss the new questions of massage and mobilization, while remodelling old question in accordance with the author's convictions. Certain chapters are purely historical, but acquire an important practical interest from their connexion with modern observations. There are long chapters upon thermo-therapeutics and mechano-therapeutics in the treatment of arthropathies following fractures. The two last chapters are quite new and refer to the re-education of movement, especially the restoration of walking in those who have been crippled by accidents. It would be impossible to give a complete review of all the chapters, of which there are 22, but some idea of the scope of the work may be got by citing a few of them: Upon the movements practised during consolidation of fractures; massage and mobilization; Amédée Bonnet and his contemporaries; discussions upon mobilization; contraindications of

massage; juxta-fractural arthropathies, their anatomy and symptomatology, etc.

The book is decidedly not one for the student; he, however, who desires a full discussion of principles and details of this branch of surgical therapeutics will find here a great deal of interest and of profit, though perhaps at the expense of considerable time.

E. W. A.

SURGICAL DIAGNOSIS. A Manual for Students and Practitioners, by ALBERT A. BERG, M.D., Adjunct Attending Surgeon to the Mount Sinai Hospital, New York. Lea Brothers Company, New York and Philadelphia, 1905.

A really exhaustive and scientific book upon surgical diagnosis, comparable with those which we possess upon medical diagnosis, such as Sahli, Musser, and others, is still sadly lacking. The present book decidedly does not fill the want; and having said this we have said most of that which can be urged against it. Taken as a textbook for students, it is on the whole one that can be recommended. One fault it shares in common with most textbooks upon the subject, in that one finds too many isolated facts and too few general principles; it is too much a strain upon the student's memory and too little a help to his reason. Nearly the whole range of surgery is reviewed from the aspect of diagnosis. The information given seems quite up to date and one is pleased to find a description of the newer things combined with a conservative estimation of their value. Especially is this so in the discussion of the more recent methods of estimating the functioning power of the kidneys. In the chapter upon fractures and dislocations there are a series of good X-ray plates and tracings. In the chapters upon injuries to the head one notices lack of discussion of the basal physiological principles upon which so much light has been thrown lately by Harvey Cushing and others. The new work also upon localization in the Rolandic area, especially connected with the name of Sherrington and Krause, is not set forth, the older plates of Starr and others being used. Cerebral localization in general is rather insufficiently treated. It would take too long to review each chapter in detail; suffice it to say that they are upon the whole well written, and that the teaching is greatly assisted by a large series of illustrations.

E. W. A.

FOOD AND THE PRINCIPLES OF DIETETICS. BY ROBERT HUTCHISON, M.D., F.R.C.P., London Hospital. Revised (second) Edition.

New York, William Wood and Company, 1906. 582 pages. Price \$3.00.

The importance of dietetics in medicine finds expression in this book. The subject is considered from every standpoint, and it is pervaded by a scientific spirit. The record of analysis of the various foods is very complete; and, most important, there is no confusion between the results of chemical analysis and those in which vital processes have a part. The researches of Pawlow have demonstrated that digestion in a warm oven is an entirely different affair from digestion in the organism. The author makes full recognition of the fact that digestion is largely dependent upon "appetite." An important section of the book is that which is devoted to patent and proprietary foods. Dr. Hutchison makes short work of them, and shows that many are false in principle and fallacious in practice. The "extracts of beef," however fortified by proteids or be-devilled with drugs, receive the rough handling they deserve. The treatment of alcohol is done with acuteness and good sense. Its value is summed up in the expression that, when properly used, it lends an agreeableness to life. This book is a fine example of the scientific method checked by common sense and presented with literary taste. It is good to read.

ANATOMY DESCRIPTIVE AND SURGICAL. By HENRY GRAY, F.R.S.

Edited by T. Pickering Pick and Robert Hunter. New American Edition thoroughly revised and re-edited with additions by John Chalmers DaCosta, M.D., Lea Bros & Co., Philadelphia, 1905.

It is needless to say anything in praise of Gray's anatomy which has for so many years been the student's friend and its illustrations have been so often referred to in after life when there was no opportunity of studying the actual subject. This American edition has eliminated many things which were in the last edition of Gray and made many additions. Some of these are valuable and others questionably of value. Other modern works have been largely drawn on for new material, Cunningham, Testut, Morris, Poirier and Carpy, etc. There are 500 new illustrations in this edition and many of them in colours. Histology and embryology have been left out entirely. The leaving out of embryology is in our opinion a mistake. We think it aids the student greatly, especially if it is incorporated in the body of the work as an appendix to each section, but so much new material is added that anatomies of the present day are huge volumes which tax not only the student's brains but his physical powers. Dr. DaCosta has done his work well, and has spared no time or pains to make this edition fully up to date.

PROGRESSIVE MEDICINE, a Quarterly Digest: Edited by HOBART AMORY HARE, M.D., March 1, 1906, Vol. VIII, No. 1. Lea Bros. & Co., Philadelphia and New York.

The contents of this volume are: Surgery of the Head, Neck and Thorax, by Charles H. Frazier, M.D.; Infectious Diseases, including Acute Rheumatism, Croupous Pneumonia and Influenza, by Robert R. Preble, M.D.; The Diseases of Children, by Floyd M. Crandell, M.D.; Rhinology and Laryngology, by D. Braden Kyle, M. D.; Otology, by B. Alexander, M.D. We note mention of the case of tumour of the upper jaw reported by Dr. Donald Hingston in this Journal in July, 1905.

NURSING: ITS PRINCIPLES AND PRACTICE. By ISABEL HAMPTON ROBB, late Superintendent of Nurses, John Hopkins Hospital. Third Edition, E. C. Koeckert, Cleveland, 1906.

This book, of considerably over 500 pages, is designed to cover the range of work laid out for a nurse for a period of three years. The author writes from her own experience, and has a large store of knowledge to draw from. A nurse who knows all which this book contains would be qualified for a physician. It is the most exhaustive book upon the subject which we have seen. The directions to nurses are sensible and are given with good taste. The author and the book are deserving of the thanks of the profession. On a previous occasion we mentioned a book by Miss Robb on "The Ethics of Nursing."

Medical News.

FRENCH-SPEAKING PHYSICIANS.

The following is the programme of the Third Congress of the Association of French-Speaking Physicians of North America, which will be held at Three Rivers, June 26th—28th, 1906.

Executive Committee of the Congress:—President, Dr. L. P. Normand, Three Rivers; vice-presidents: Dr. J. O. Carmirand, Sherbrooke; Dr. J. E. Dubé, Montreal; Dr. G. A. Boucher, Brockton, Mass., U.S.; general-secretary, Dr. Charles DeBlois, Three Rivers; secretary, Dr. Eug. St. Jaques and Dr. F. X. Dorion, Quebec; treasurer, Dr. Alex. St. Pierre, Three Rivers.

Local Committee:—Hon. President, Dr. E. F. Panneton; president, Dr. L. P. Normand, general secretary, Dr. C. N. DeBlois; treasurer, Dr. A. St. Pierre.

Correspondents:—The secretaries of the different Medical Societies of Canada and the United States are ex-officio correspondents of the Executive Committee of the Third Congress of Medicine for their respective city or district.

The Executive Committee of the Congress has also named a certain number of correspondents for the French centres and the different States of the neighbouring Republic. Undoubtedly all will unite their efforts together, to the end that this next Congress of Three Rivers should be a decisive affirmation of the vitality and force of our Franco-American Association.

The following communication has been sent to the members.

Three Rivers, February 26th, 1906.

Sir and Confrère,—We have the honour to inform you that the opening of the Third Congress of the Association of the French-Speaking Physicians of North America is definitely fixed for Tuesday, June 26th next, and will take place at 2.00 p.m., in the City Hall, Three Rivers.

For the third time since its foundation our Society will meet officially and our re-union will coincide with the National French Canadian festival celebrated this year at Three Rivers.

You will recall the success and importance that our two other Congresses at Quebec and Montreal have had.

Everything goes to assure an equal success for the coming Congress at Three Rivers.

The principal questions which will be undertaken at the meeting are:

1. Alcoholism; prophylaxis, treatment and prevention by education of children. 2. Infantile hygiene. 3. Tuberculosis.

You are cordially invited to contribute in some form to the success of this Congress, either in making a communication on one or other of these questions, or, if you wish, by a paper on some work upon a subject of your choice.

For this purpose we send you a form of application as a participating member. We hope you will consider it a duty to fill it and return it to the General Secretary by the 26th May, if it is possible.

Preliminary Programme:—The regular meetings of the Congress will continue from the 26th to the 28th of June, inclusive, in the order briefly indicated below:—

Tuesday, 26th, 2.00 p.m. Official opening of the Congress of Three Rivers by Dr. L. P. Normand, president. Report of the General Secretary.

3.00 p. m. Reading of and discussion upon general reports. 8.00 p.m. Special meeting. 9.00 p.m. General illumination of the Town and concert.

Wednesday, 27th. 9.30 a.m. Further general reports. 2.00 p.m. Scientific communications. Visit to the Hospital. Special meeting.

Thursday 28th. 9.30 a.m. Communications of scientific works upon professional subjects. Elections of officers of the Association, date and place of reunion of the next Congress. Closing exercises.

An excursion to Grand Mere and Shawinigan Falls will be given to the members of the Congress.

A more detailed account of the programme will be addressed to you a little later, as well as to each of the members of the medical profession. Louis Philippe Normand, President. Charles DeBlois, General Secretary, 23 Laviolette Avenue, Three Rivers, Que.

The following have been elected from the Société Médicale of Montreal to the various sections of the Congress of French-speaking Physicians at Three Rivers, June 26—28th.

Section of Medicine:—President, M. Hervieux. Secretary, M. Laramee. *Section of Ophthalmology*:—President, M. le prof. L. E. Desjardins; secretary, M. Lasalle. *Section of Mental Medicine*:—Vice-President, M. Chagnon; secretary, M. Dion. *Section of Surgery*:—Vice-President, M. Marien. *Section of Hygiene*:—Vice-President, M. Pelletier. *Section of Gynaecology*:—Secretary, M. Ethier.

QUEEN'S UNIVERSITY.

On April 9th, degrees in medicine were conferred upon 47 graduates. A. E. Baker, Black Falls, Sask.; W. H. Ballantyne, Kingston; J. A. Barnes, Kingston, Jamaica; A. M. Bell, Moscow; E. Bolton, Phillipsville; F. J. Brandock, Northport, N.S.; H. Cochrane, Sudbury; G. L. Cockburn, Sturgeon Falls; C. B. Dean, Bridgetown, Barbadoes; D. G. Dingwall, W. F. Gavin, Lancaster; G. D. Gordon, C. W. Graham, B.A., Kingston; J. Johnston, B.A., Combermere; W. G. Leadley, C. A. Lawlor, Kingston; S. L. Lucas, Kingston, Jamaica; F. E. Lowe, Adelphi, Jamaica; S. McCallum, M.A., Brewer's Mills; J. P. McCormick, Ottawa; D. J. McDonald, Whycocomagh, N.S.; A. G. McKinley, Chapelton, Jamaica; D. McLellan, Forester's Falls; F. R. Nicoll, B.A., Kingston; F. J. O'Connor, Long Point; W. M. R. Palmer, Northcote; R. K. Paterson, Renfrew; W. E. Patterson, Newburgh; W. R. Patterson, L. L. Playfair, C. A. Publow, Kingston; H. O. Redden, Ernestown; J. Reid, Renfrew; A. D. C. Robb, Nashville, Tenn.; B. A. Sandwith,

Whitstable, Eng.; F. F. Saunders, Rhinebeck, N.Y.; S. S. Shannon, Kingston; S. H. Smith, Chambers; J. B. Snyder, Lancaster; W. E. Spankie, Wolfe Island; J. R. Stewart, B.A., Waba; E. M. Sutherland, B.Sc., B. C. Sutherland, Montreal; W. J. Taugher, Beachburg; C. P. Templeton, Napanee; J. J. Wade, Balderson; D. M. Young, Bristol, Que.

ROYAL VICTORIA HOSPITAL.

Monthly report for April:—Patients admitted, 270; discharged, 254; died, 17. Medical, 89; surgical, 117; ophthalmological, 18; gynaecological, 33; laryngological, 13. Outdoor:—Medical, 778; surgical, 709; eye and ear, 312; diseases of women, 137; nose and throat, 373; total, 2,309. Ambulance calls, 76.

Dr. Alexander Allan Henderson, of Ottawa, died on May 3rd, 1906, after an illness of six months. Dr. Henderson was born in Scotland in 1845 and came to Canada in 1849. He was educated at McGill University, where he graduated in medicine with honors in 1870 winning the Holmes gold medal, and the special prize in clinical surgery. His son, Mr. Smith Henderson, is a student of medicine in the fourth year at McGill.

Dr. Charles Holden died in St. John, N.B., on May 2nd, 1906. He was a graduate of Edinburgh University and had practised in St. John since 1869.

Dr. Daniel Cram died in Ottawa, at St. Luke's Hospital, in the 66th year of his age. Dr. Cram was a graduate of McGill University.

Dr. George D. Turnbull, of Yarmouth, N.S., died in Calgary in the 40th year of his age.

Dr. John R. Mitchell, of Perth, died in the Royal Victoria Hospital as the result of appendicitis on April 23rd, 1906.

The new addition to the Portage la Prairie hospital was opened on April 24th with appropriate ceremony. In Moose Jaw also a new general hospital was opened on April 17th.

BRITISH MEDICAL ASSOCIATION.

Amongst the members who will attend the meeting of the British Medical Association at Toronto are:

Allbutt, Prof. Clifford, F.R.S., St. Radegund's, Cambridge. Regius

Professor of Medicine, Cambridge; Armour, Donald, Esq., F.R.C.S., 89 Harley st., W., Cambridge; Ashby, Dr. Henry, 13 St. John st., Manchester; Barbour Dr. A. H. F., 4 Charlotte Sq., Edinburgh; Barlow, Sir Thomas, Bart., K.C.V.O., M.D., 10 Wimpole, st. W.; Barnes, Dr. Henry, LL.D., 6 Portland Place, Carlisle; Barr, Sir James, M.D., 72 Rodney st., Liverpool; Bradford, Prof. J. Rose, M.D., F.R.S., 8 Manchester Sq., W.; Broadbent, Sir William, Bart., K.C.V.O., M.D., 84 Brook st., W.; Browne, Dr. Langely, Moore House, West Bromwich; Buzzard, Dr. E. Farquar, National Hospital, Queen Sq., W.C.; Cameron, Sir Hector Clare, M.D., 200 Bath st., Glasgow; Gibson, Dr. G. A., 3 Drumsheugh Gardens, Edinburgh; Griffith, Dr. W. S. A., 96 Harley st., W.; Halliburton, Prof. W. Dobinson, M.D., F.R.S., 17 Marlbone Road, N.W.; Horsley, Sir Victor, F.R.S. 25 Cavendish Sq., W.; Lawford, Dr. J. B. 99 Harley st., W.; MasAlister, Dr. Donald, D.C.L., Barrmore, Lady Margaret Road, Cambridge; Manby, Sir Alan Reeve, M.V.O., M.D., East Rudham, Norfolk; Mickle, Dr. W. J., Grove Hall Asylum, Bow E.; Osler, Prof. W., M.D., F.R.S., 7 Norham Gardens, Oxford; Roaf, Dr. Herbert E., Bio-Chemical Dept., The University, Liverpool; Sherrington, Prof. C. S., M.D., F.R.S., Physiological Laboratory, The University Liverpool; Woodhead, Prof. G. Sims, M.D., F.R.C.S.E., 6 Scroops Terrace, Cambridge; M. le Docteur Delezenne, Directeur du Laboratoire de Physiologie de l'Institut Pasteur, 25 Rue Dutot, 15E Arrondissement, Paris; M. le Dosteur L. Lapique, 6 Rue Dante, 5E Arrondissement, Paris; M. le Docteur M. Nicloux, 107 Rue Mouge, Paris; Professor Justus Gaule, University of Zurich; Professor Max v. Frey, University of Würzburg.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

FRACTURE OF THE BASE OF THE SKULL, AND LUMBAR PUNCTURE:

DISCUSSION. Reviewed in the *Bull. et Mem. de la Soc. de Chirur. de Paris*, 8th November, 1905.

Potherat reports a case of fracture of the base, by a fall from a bicycle upon the head, followed by incomplete loss of consciousness. Patient was able to walk without help; answered questions very slowly and inaccurately; pulse 70; vomiting a few hours later, pulse 56; patient apparently comatose. During the following days there was fever; pulse

down to 48, persistent semi-coma; general condition poor, severe headache. Lumbar puncture gave several cc. of a reddish tinged fluid. No material change until subsidence of headache. Lumbar puncture was done every third day. Cured in 24 days with gradual improvement in the general condition. The author concludes that lumbar puncture demonstrates the presence of blood in the cerebro-spinal fluid, and thereby the existence of a fracture of the base. He thinks that the punctures exercise a favourable effect upon the symptoms of cerebral pressure.

Terrier has observed in one case a very decided improvement in the pain and the headache from repeated lumbar punctures.

Guinard had observed a case in which the diagnosis of basal fracture could be established. Patient became delirious on the third day and after a lumbar puncture with the withdrawal of 40 cc. of reddish fluid complete disappearance of the delirium was brought about. The same evening the delirium returned and was again relieved by the evacuation of 40 cc. under pressure. During the next afternoon there was sudden death. At the post mortem no fracture was found; a considerable amount of blood was in the subarachnoid space; no bleeding into the ventricles.

Rochard does lumbar puncture in all cases, even if only to relieve headache.

Tuffier remarked that he had never maintained that the presence of blood in the puncture fluid was a proof of basal fracture; the only thing it did show was that a cerebral contusion was present. He held that the emptying of fluid under pressure from the cerebro-spinal spaces was dangerous inasmuch as the sudden relief of pressure in the 4th ventricle could easily cause syncope. Terrier also remarked upon the danger of emptying spinal fluid under pressure.

Potherat did puncture of the lateral ventricle removing 30 cc. in a case of cerebral tumour in which the symptoms were supposed to be due to secondary hydrocephalus. After the puncture the temperature ran up to 41°C. and 24 hours later death occurred. At the autopsy a small tumour was found in the roof of the 4th ventricle which was separated from the floor of the ventricle by cerebro-spinal fluid, which was not present in such an amount as has been believed. Raymond explained death in this case by compression of the 4th ventricle by the tumour after evacuation of the fluid.

Broca also had frequently observed death with hyperthermia following quickly upon emptying of hydrocephalus sacs, and believed that the cause of death in such cases was the rapid fall of pressure *per se*.

E. W. A.

WILLIAM J. MAYO, "Gastric Cancer," *Journal A. M. A.*, April 7th.

Dr. Mayo points out that there is no medical side to cancer of the stomach, and reviews the literature, showing what enormous strides have been taken in gastric surgery of late years. He reviews the statistics of several leading surgeons as well as his own, and shows that not only in the direct mortality of the operation, but also in its later results, it compares favorably with the surgery of cancer of other parts of the body. The only way in which an early diagnosis can be made is by exploratory incision, but clinical symptoms, especially if associated with a history of old or recent ulceration, may arouse suspicion and justify exploration. He gives in detail his steps in performing the radical operation for cancer of the stomach, and remarks that the results of palliative operations are relatively unsatisfactory, the mortality being comparatively high and the average prolongation of life not very great. In 140 of his cases of gastroenterostomy the mortality was 15 per cent., and the average prolongation of life so far as known was less than five months. The figures given by Kronlein and Mikulicz are even worse. The operation merely prolongs a chronic invalidism by a few hopeless weary months. For cancerous obstruction of the cardiac orifice, however, gastrostomy is the only resource, and is frequently demanded by the patient. He has had 18 cases with three deaths, a mortality of 16 per cent. The duration of life was about the same as after gastroenterostomy. Of explorations with discovery of hopeless gastric cancer he had 72, with one death in the hospital. The average stay of such patients in the hospital is less than five days, the deep wounds being closed with catgut, and the strong aponeurotic structures braced with buried mattress sutures of linen, silk or silver. The patients are thus enabled to get about at once and spend the remainder of their lives with their families. In conclusion, Mayo urges on the profession the merits of the radical operation in suitable cases of gastric cancer. The article is elaborately illustrated, showing the steps of the operation.

FREDERIC EVE, F.R.C.S. "The Surgical Treatment of Gastroptosis." *Brit. Med. Journ.*, April 7th, 1906.

Attention is drawn to the frequency of this condition, Glenard himself having observed it 400 times among 1300 patients. The clinical picture of such a case is that of chronic severe atonic dyspepsia with neurasthenia and increasing emaciation. In a large number of cases Bevea's operation is the best: but as frequently happens, the gastric-hepatic omentum is so thin that it scarcely bears handling and much less suturing. In

such cases the writer advocates utilizing the structure to which the gastrio-heptic omentum is attached, namely, the liver and the stronger portion of the omentum forming its upper root of attachment. In such cases the lower sutures must be placed through the serous and muscular coats of the stomach and the anterior attachment of the omentum in order to avoid the gastric and pyloric arteries. Such a procedure gives a firm hold to the sutures, and at the same time is not likely to interfere with the mobility of the stomach, as is the case when the lesser curvature of the stomach is attached to the anterior abdominal wall, according to Duret's operation. It is only fair, however, to state that of the reported cases so operated upon all were improved and some gained weight. In cases associated with chronic ulcer, or where as a result of the altered functioning of the gastric glands hydrochloric acid is absent, mere elevation of the stomach fails to effect a cure and in such cases a posterior gastro-enterostomy is to be performed.

JOSEPH RANSOHOFF, M.D., F.K.C.S., Eng. "Discission of the Pleura in the Treatment of Chronic Empyema." *Annals of Surg.*, April, 1906.

The operation of Estlander and its modifications by Schede, Lenu, Jaboulay, and others were undertaken with the idea that the lung tissue had lost its elasticity and that in order to obliterate the space the chest wall would have to be permitted to fall in and so fill up the space. As a result of research work this has been shown to be a wrong view, and that the lung tissue, if freed from the binding down influence of the visceral layer of pleura, still retained its power to expand. The credit of first performing the operation of dissecting of this parietal layer is given to Fowler, who in 1893 operated upon a case of two years standing. The operation here described is not that of decortication as performed by Fowler, but of making gridiron incisions through the visceral pleura. These incisions are carried down through the entire thickness of the pleura to the lung tissue. A very important incision is that which frees the pleura at its reflexion with the parietal portion. If this incision be limited to the costal part of the gutter and carried towards the chest wall, there is no danger of wounding large vessels or of opening the sound pleura above. This operation is not sufficient of itself to obliterate the space but must be preceded by one after Estlander's or Schede's procedure. It is, however, a much less time consuming operation and one attended with much less risk to the patient. Should the cavity be large repeated operations are necessary for the safety of the patient. Four cases are reported in which this method was employed, all with most gratifying results.

H. M. W. GRAY, M.B.C.M. Aberd., F.R.C.S. Edin. "Vaccine Treatment in Surgery."

The writer has endeavoured to test the efficacy of this treatment during the past 18 months. He has found that in cases of enlarged tuberculous glands that they disappear after a very few injections. It is not always possible beforehand to know whether caseation is present or not, but he believes that if the glands are not markedly decreased in size in from six to eight weeks' treatment it is a sign of the presence of caseation. When such has occurred removal by operation is necessary. If abscess formation exists it should be evacuated, the wall gently scraped, and cavity loosely patched. If the caseated glands be isolated gently scooping out of the focus is all that is required. Periadentitis disappears under vaccine treatment. Where a mixed infection is present injections of staphylococcus or streptococcus should be given. Post operative healing is without doubt promoted by giving one or two injections of T. R. ing. The operation here described is not that of decortication as performed before operation, which should take place about the time the third injection is due. In that large class of tuberculous joint affections we have a much brighter prospect. Early diagnosis and the addition of T. R. to these well proved and approved lines of treatment usually employed will give us ultimate complete success in restoring full healthy function. He is against the long immobilising of the joint and advises that, if not contra-indicated by the general progress of the case, passive movements be attempted and the patient be allowed well governed movements from two to four weeks after all tenderness on palpation of the joint has disappeared. Such a plan will shorten the course of treatment by about half. If abscess, sinus formation and compound infection have occurred the mixed vaccine must be employed along with operation. In psoas abscess he prefers incision so as to thoroughly evacuate all caseous material and pieces of dead bone to simple aspiration. Two cases under such treatment combined with the mixed vaccines have made excellent recoveries. In genito-urinary tuberculosis he has not had the same constant as the others report. Mixed injection takes place early in this class and it is most necessary and advantageous to obtain information as to the nature of the complicating organisms and then make and use the suitable vaccine. He strongly supports Mr. G. L. Cheate's suggestion of giving the mixed vaccine prior to operations for malignant disease of the mouth as a guard against subsequent sloughing and septic pneumonia. Many other interesting topics are suggested as showing the advance in our therapeutic measures. For dosage and guidance in administration the reader is referred to the article.

W. S. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

AN ANALYTICAL STUDY OF ACUTE LOBAR PNEUMONIA IN THE JOHNS
HOPKINS HOSPITAL FROM MAY, 1889, TO MAY, 1905, by J. A.
CHATARD, M.D. *Maryland Medical Journal*, May, 1906.

The following statistics were gathered from the records of the hospital for the past 16 years, during which time there were 658 patients for pneumonia, excluding ether pneumonias. Of this number 200 died, a percentage of 30.39, though if terminal pneumonias are excluded the number of deaths is 165, or 25.07 per cent.

The number of cases increased up to 1899, but in 1900 and 1901 there was a sharp rise in the number, followed by a large drop during 1902 and 1903, followed again by a rise in the number during 1904 and 1905. During 1904 there was a general increase in the cases as ascertained by comparing other records.

Age.—The greatest number of cases occurred in young adults 20 to 40 years old—55 per cent. In patients from 20 to 30 years old 22 per cent of the cases occurred, and 18 per cent of the cases occurred in patients younger than 20 years. A comparison of the mortality with this age table is interesting. In early adolescence the mortality is low—4 per cent; during the period of greatest frequency, 20 to 30 years, it is 44 per cent, and after that period we find a steady rise to about 80 per cent of deaths.

Sex.—The male patients far outnumber the female patients, being 533, with 154 deaths, compared with 125 females, with 46 deaths. The death-rate in the females far outnumbered that in the males—males about 28 per cent, but females about 36 per cent.

Race.—White, 238 cases, with a mortality of 30 per cent; foreign, 170 cases, with a mortality of 29.4 per cent; black, 250 cases, with a mortality of 31.2 per cent.

Seasonal Variation.—From January to March there is a rise in the number of cases, when the greatest number occur; while during the summer months there is a great diminution in the number of cases, although the mortality is increased.

Occupation.—Outdoor occupations, 347 cases, with 34 per cent mortality; patients with indoor occupations, 274 cases, with 26.6 per cent mortality. Alcohol was admitted by 426 patients, 30.9 per cent mortality.

Previous Attacks.—One previous attack of pneumonia was stated by 88 patients, two previous attacks by eight, three previous attacks by three patients, and one patient claimed to have had four attacks.

One hundred and twenty-one of the patients were exposed to bad weather, eight to extremes of temperature; there were eight cases in nurses and orderlies, and three cases among doctors. As regards family history, there was a history of tuberculosis in the family in 11.3 per cent of the patients. All tuberculous pneumonias were excluded from these statistics.

Symptoms.—The most frequent symptoms were pain in the side, chill and cough. Abdominal pain was present in 51 of the cases, or 7.7 per cent. The pulse was considered slow when it registered below 90 beats per minute, and of the patients exhibiting this pulse-rate 31.6 per cent died. Patients with a medium pulse-rate, below 125, showed a death-rate of 14.9 per cent, this medium pulse-rate occurring in 50.7 per cent of the cases. Patients with a rapid pulse, over 125 per minute, showed a death-rate of 49.4 per cent.

Temperature.—This was subnormal, below 98.5° in five cases, with two deaths; between 100-102° in 39 cases, with 13 deaths; between 102-104° in 49 cases, with six deaths, and between 104-106° in 384 patients, with about 27.7 per cent mortality. The temperature was above 106° in 49 patients, with 55 per cent of deaths. The admission temperature was generally between 102° and 104°, though in one-sixth of the patients it was below 100°.

Respiration.—The respiratory rate was rapid in the majority of the cases, those patients exhibiting laboured respiration and cyanosis having a high mortality, about 43.2 per cent.

Sputum.—The sputum in the majority of the cases was mucopurulent, tenacious, and rusty. In 93 cases the pneumococci were found in the sputum.

Involvement.—In 354 cases the right side alone was involved, with a mortality of 26.5 per cent; the right lower 139 times. The left side was involved alone 168 times, with a mortality of 20.2 per cent. In double pneumonia the mortality was about 54 per cent.

Pneumococci were isolated from the blood in 25.2 per cent of the cases, and of these 69.1 per cent died. The joints were aspirated in three cases and the cocci obtained in one case.

Complications.—There were 338 cases of pleurisy, with a mortality of 51.2 per cent, empyema occurring in 27 cases. Pericarditis was present in 35 cases, mortality 76.9 per cent, and jaundice in 76 cases, with 21 deaths. This latter complication—jaundice—varied in frequency with the years, in 1901 there were the greatest number of cases during the latter year. There were 13 cases of meningitis, all fatal.

The greatest number of cases showed a leucocyte count of between 25,000 and 30,000, with the lowest mortality—19 per cent. The highest

mortality occurred among the cases with the lowest leucocyte counts (below 10,000). Albumen was present in the urine of 541 cases, casts in 107 cases, and the diazo reaction in 16.8 per cent. Bile was present in 34.3 per cent.

Peritonitis, tonsillitis, and arthritis occurred each three times. There were eight cases of septicemia, 149 cases of delirium, with about 47 per cent mortality, 12 cases being admitted with delirium. Herpes was noted in 180 cases and not noted in 265. Where a note was made herpes occurred on the lips in 87 patients, on the nose in 43, on the ears in 3.

Among the special features, delayed resolution was noted in 35 cases, and relapses occurred in 5 patients. The average blood pressure was between 125 and 155 mm. of mercury. Terminal pneumonia occurred 35 times.

Defervescence was considered as a "true crisis" when occurring in 12 hours or less; "protracted" occurring in from 12 to 24 hours. True crisis occurred in 21.6 per cent, and it was protracted in 15.5 per cent; there were 17 cases of pseudocrisis. The crisis was usually associated with a fall in the number of leucocytes. The crisis usually occurred from the seventh to the ninth day, though there was one case occurring as early as the third day and one as late as the fifteenth.

For treatment, stimulants were used in 536 cases and symptomatic treatment was employed in 460 cases. Measures employed were the ice bag, poultices, sponges, oxygen, and in a few cases the antipneumococcus serum. The serum gave little, if any, good results.

Typhoid fever occurred in 24 cases as an associated condition, nephritis 18 times, and heart lesions occurred next in order of frequency.

ROBERT T. MORRIS, M.D. "A Case of Heteroplastic Ovarian Grafting. Followed by Pregnancy, and the Delivery of a Living Child." *Medical Record*, May 5th, 1906.

Dr. Morris reports this case. The patient was a married woman, twenty-one years old. Menstruation began when she was 15 years old and stopped in four years. The last two years the patient had suffered from the common symptoms of the menopause. The writer made a diagnosis of cirrhotic ovaritis and decided to do ovarian grafting. Four months after the operation the patient menstruated. The period lasted for five days. It was five months before menstruation again took place, lasting but one day. In the following month it lasted four days, and after that it appeared at normal intervals. Four years after the grafting the patient was delivered of a child weighing 7½ pounds. The writer states that the present case of heteroplastic grafting renews the hope that certain women who have reached the menopause through

disease, surgical operation, or possibly after the normal menopause, may be made fertile.

"THE MILK SUPPLY OF RICHMOND, VIRGINIA," FROM A SANITARY STANDPOINT—A PRELIMINARY STUDY. By ERNEST C. LEVY, M.D. *The Virginia Medical Semi-Monthly*. April 27th 1906.

Dr. Levy in an exhaustive study of this subject publishes a series of tables which are of great interest. Table I. Shows the number of bacteria per cubic centimeter in samples of milk collected from soda fountains, restaurants, small dealers. Table II. Shows the number of bacteria per cubic centimeter in samples of milk collected from delivery wagon. Table III. Shows the number of bacteria per cubic centimeter in samples of milk as received at the dairies—samples collected from cans brought in by the producers. Table IV. [V. in the series]. Shows contrast between milk obtained from the cow before and after washing udder of cow and hands of milker, and also the effect of keeping milk cool.

As the milk came from the cow, the clean sample had only 200 bacteria per cubic centimeter, while the one collected without any precautions had 11,000. Further determinations were made after 14, 19 and 43 hours. From this experiment it is evident that the milk which was carefully collected and kept cold was far better at the end of nearly two days than the average sample taken from the waggons about town, having only 200,000 bacteria per c.c. at the end of 43 hours, while at the other extreme, the sample which was not clean at the start and not kept cold had 1,000,000,000 bacteria per c.c. after the same interval. This sample had passed the limit of the Boston standard after only 14 hours, having at that time 730,000. The difference in the keeping quality between clean, cold milk and unclean warm milk is forcibly demonstrated.

"RHEUMATIC MANIFESTATIONS IN CHILDREN." By M. H. SICARD. *Medical Record*, May 5th, 1906.

The author gives the following résumé: Rheumatism in nursing infants is very rare; in childhood the disease is atypical, the joint signs being but little marked; the so-called complications are in children rather types of the disease, for they may occur without joint symptoms, either alone or associated with each other. The whole attack, while seemingly mild and subacute, is capable of causing severe damage to other structures, notably the endocardium, pericardium, and the nervous system. Relapses occur and patients are often left invalids for life.

"THE PARASITISM OF THE TUBERCLE BACILLUS." By THEOBALD SMITH, M.D. *Journal A. M. A.*, April 28th and May 5th, 1906.

Dr. Smith finds from his studies on cattle that there are three main portals of entry of the tubercle bacillus into the system, the upper air passages, the lungs and the small intestines. Infection by other routes, such as the skin, is very exceptional. The lodgment in the lymph nodes is accomplished without any apparent lesion whatever, and the nodes act as temporary barriers to the progress of the infection. The tendency is to the formation of a quiescent focus—the tubercle. There is probably some element in the blood that, together with the stimulating influence of the bacilli, provokes the protective cell proliferation. The bacilli, when set free from a discharging focus are provided with an inert protective envelope, which is destroyed by the normal tissue fluids. When this happens they are able to multiply, but this multiplication stimulates cell proliferation and, according to the activity of this process, multiplication is checked. The bacilli are destroyed in part; the rest, through the protecting influence of caseation, remain, latent, provide themselves with the protective envelope, and if discharged outward are able to infect another individual. The question of the possibility of producing a specific artificial immunity toward the tubercle bacilli is discussed at length by Smith, who thinks the best results in protective inoculation will be obtained with the use of bacilli killed at a low temperature and from fresh cultures, which can be made at any hospital or sanitarium. These can be injected locally, each injection forming a new radiating focus of immunity, and the fresh culture insuring a more effective preparation. The tendency of infectious diseases, he holds, is toward a balanced parasitism, with reduced mortality, but not necessarily a reduced morbidity. This is due to selective adaptation of both the host and parasite, and this selection will, he believes, go much farther, and we may yet have a type of tubercle bacilli producing only a bronchitis. There are already some indications of this. The effect of a possible immunization of the human race is open to question. Immunization, Smith says, would be an admission that the germ has come to stay, and merely increasing our resistance to the prevailing type would lead eventually to the selective production of more virulent types and a slackening of the usual preventive measures that might eventually cause disastrous effects from the newly-developed more virulent organisms.

"THE PHARMACOPEIA AND THE PHYSICIAN." Chapter II, *Journal A. M. A.*

Chapter XIII in the number of March 24, begins with the subject of metallic astringents, bismuth being first noticed. It is useful in its in-

soluble forms, and, while some of the soluble salts are astringent there are safer astringents that can better be used in their stead. The proprietary preparations intended to combine the antiseptic properties of the benzine derivatives are not approved. It is better to use the simple astringents and antiseptics separately; subsalicylate and subgallate of bismuth, however, are official. The official lead salts are also noted. The principle one for internal use is the acetate and this is usually combined with opium in the treatment of diarrhœa. For dysentery it is not nearly so useful, and it should always be employed with caution for fear of chronic lead poisoning. The local treatment of mucous membranes may also call for the use of mild astringents, though the use of hydrogen dioxid has greatly lessened their employment. Zinc salts are considerably used in certain situations, and the sulphate is probably the best of the astringents when used for emetic purposes. The copper and iron salts are also discussed and nitrate of silver, the internal use of which as an astringent is largely empirical, as the actual action of silver nitrate in contact with organic matter must be rather complex. The chapter concludes with a notice of the vasoconstrictors, the most useful of which are hydrastinin, a derivative of hydrastin, and the alkaloid of the suprarenal gland. The desiccated suprarenal gland itself is inferior to the alkaloid, though it is official. In view of the numerous trade names under which the solution of the alkaloid passes it is regretted that in the revision of the pharmacopeia, the alkaloidal substance was not recognized and made official in some way.

Stomachics, including bitters and aromatics, are discussed in the special article, March 31st. Little is known of their mode of action, and it is possible that their psychic effects may have some part. It is possible that these preparations excite the digestive secretions in a reflex way and similarly the gastric movements. Bitter substances in the stomach have been found to increase the number of leucocytes in the blood, and if these are concerned in the transportation of the digestive proteids they may also have an effect in this way. Out of a considerable number of official preparations it has been thought necessary to enumerate only a few of the more important and popular, such as gentian, calumba and quassia, to illustrate the variety and uses of these drugs. Aromatics, which are next taken up, owe their flavour, and slightly irritant action on the mucous membranes to the contained volatile oils. It is possible, owing to their generally agreeable flavour, that they exercise a reflex action on the gastric secretion. It is claimed also that they reflexly excite the pancreatic secretion, and that they have an anti-ferment action and may lessen gastric fermentation. Their slightly irritant and hyperemic effect is probably the main factor in affecting

digestion after their reflex action. Bitters, and especially the aromatic bitters, are indicated in loss of appetite not due to severe gastric disturbances. In gastric hyperacidity they probably increase the trouble. Of the official aromatic bitters are mentioned only calamus and bitter orange peel and their preparation. A number of astringent bitters are enumerated, including some drugs that have been mentioned already in other connections, such as hydrastis, cinchona, nux vomica and cinicifuga. Carminatives are agents producing a sense of warmth and well-being; they act as antispasmodics and expel gases from the intestinal canal. They are indicated in pain in the stomach or bowels when this is due to simple indigestion or to distension, but not in case of inflammation, when they would augment the trouble. Many carminatives are household remedies, and the preparations noted here are zingiber, the official mints, asafetida, chloroform and ethers, and cloves.

Chapter XVIII of the special article, April 28th, begins with the definition of tonics and a statement that the term implies to a certain extent an inexact knowledge of the real action of the drugs. With better knowledge the importance of the term will decrease. Among tonics we may include stomachics, hematinics, or agents that aid in the regeneration of the blood, and alternatives, the mode of action of which is unknown. Of the hematinics, iron is the first to be considered. The question of its absorbability and the methods by which it may be absorbed are first discussed, and the diversity of opinion as to the actual precursor of the hemoglobin of the blood is shown. As bearing in the value of certain widely advertised hematinic proprietaries, it is stated that, as we can nearly always supply sufficient iron in the food, the so-called "organic" iron preparations are really seldom required. Inorganic iron, on the other hand, according to Bunge, does stimulate the functions concerned in the assimilation of iron when it is abundant in the food, when organic iron added to the food or to organic iron combines with the hydrogen sulphid in the intestine and spares the organic iron precipitation. After an enumeration of the many official preparations of iron, the indications for the drug are taken up. Hematinics are indicated when the amount of the blood or of any of its essential constituents have been greatly reduced. If the patient is able to take an abundance of food, inorganic iron, or both, should be used. The proper selection of food is of the first importance, and a table showing the iron content of a number of common articles of diet, taken from Bunge, is given. Bunge distinctly warns the using of high-priced pharmaceutical iron preparations and calls attention to the value of beef, blood sausage and blood. The last-named seems, however, to be very often ill-borne

and hematin appears to be equally serviceable in any case. The use of a proper diet, together with suitable doses of inorganic iron in most cases, or of organic and inorganic iron in the few cases where they are needed, will usually be found all that is necessary in the treatment of anemias. A number of prescriptions suitable for the conditions that may be met are given.

“TUBERCULOSIS AND RAILWAY TRAVEL.” By CHARLES B. DUDLEY.
Railway Age, Oct. 13th, 1905, and *Yale Medical Journal*, March 1906.

Dr. Dudley, chemist of the Pennsylvania Railroad, thinks that the dangers to the public as regards the spread of tuberculosis in railway travel have been greatly exaggerated. He puts forward the following points to sustain this view:

1st. The average railroad journey does not entail a sufficiently long exposure necessary to infection. We know that ordinarily, tuberculosis is probably acquired by prolonged and rather intimate exposure to the material.

2nd. Tuberculosis sputum is difficult to dry and pulverize. The statements made heretofore that one has merely to rub with the foot on the dry sputum to raise immediately a cloud of dust of infectious germs are absolutely false, and even sputum artificially dried, beaten and rubbed into a dust, readily falls to the ground, where it is, of course, less dangerous.

3rd. The construction of railway coaches, namely, long and narrow, and containing many windows, affords the best possible opportunity to the action of sunlight and air in diminishing the vitality of the bacilli.

In fourteen examinations of carpet dust from cars, many of which were known to have carried tuberculous people, none showed the presence of tubercle bacillus. Out of sixty-four examinations of dust collected by means of swabs from the interior surfaces of similar cars, including seats, bedding, curtains and woodwork, only one showed bacillus tuberculosis, and this was doubtful.

Out of ninety-six examinations of air from similar cars, only one showed bacillus tuberculosis, and out of twenty-one bacterial examinations of material obtained from drinking cups, none showed this bacillus.

4th. He shows by statistics that conductors, brakemen and porters, who would naturally be more largely exposed to the infection, suffer considerably less from consumption, than the average. On the contrary, conductors and brakemen of freight trains more frequently acquire this disease than those in the passenger service.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The fourteenth regular meeting of the society was held Friday evening the 20th April, 1906, Dr. F. R. England, president, in the chair.

OSTEOMA IN THE MUSCLE OF UPPER ARM.

E. W. ARCHIBALD, M.D., presented a patient with a hard tumour in the soft tissues of the deltoid region. He had been referred to the surgical outdoor of the Royal Victoria Hospital by Dr. Wm. Howell. The man, while carrying a load of coal on one shoulder, slipped through a hole in the floor, one leg going under, and the elbow coming in contact with the floor with considerable violence, but the shoulder received no hurt. Beyond a slight local injury to the elbow nothing was noticed until three or four weeks later, when this swelling appeared in the shoulder. The latter had remained practically unchanged since. It caused no symptoms whatever, nor did it interfere with the function of the shoulder in the slightest. Dr. Archibald considered that this was a bony tumour developing in the deltoid muscle, a myosteoma as happens occasionally in accidents of this sort. It was however rather rare on this continent, the only one he had seen or heard of was one upon which he had operated some three years ago, in which case an osteoma had developed under and in the brachialis anticus following fracture of the elbow joint. The X-ray photograph confirmed the diagnosis.

F. J. SHEPHERD, M.D. I have seen one or two of these cases, I remember one in the biceps which I removed; I also operated on one in the thigh. They, of course, all follow injury. We had no X-rays in those days and these were cut down upon thinking them to be tumours, and the osteoma was found.

E. W. ARCHIBALD, M.D. I am very glad to hear from Dr. Shepherd that he has seen these cases before; I had made quite a few enquiries but no one seemed to have heard or seen a like case. The condition is much more common in the old country where large standing armies go through a daily musket exercise than it is on this continent.

ABNORMALITY OF THE CAROTID ARTERY. HOUR-GLASS STOMACH.

A. E. ORR, M.D., presented anatomical specimens of these conditions, illustrating the former with diagrams. Both specimens were obtained from the dissecting room of McGill Medical College during the past session. The right common carotid, six m.m from the innominate, divides into a small internal carotid and a large external carotid. There is a thyriodea ima from the upper part of the innominate; and the inferior thyroid springs from the abnormal external carotid, opposite the thyroid cartilage.

The stomach is divided into a cardiac and a pyloric sac, connected by a narrow cylindrical portion. There were no adhesions to surrounding organs. In the narrow part the walls are thick and the mucous membrane is thrown into longitudinal folds. There is no evidence of ulceration or corrosive gastritis. The existence of a congenital form of hour-glass, or bilocular, stomach is rather doubtful. Recent investigations show that during digestion the stomach contracts into many of the shapes which have been found *post mortem*, and exhibited as the congenital variety. It is probable that the example now shown presents merely a phase of normal peristalsis, a contraction fixed in death.

F. J. SHEPHERD, M.D. I am sure we are all interested in the specimens Dr. Orr has shown us this evening. With regard to the first anomaly it is a very rare one, and it is also an important one to remember. I have seen several cases where there was no early division of the carotid artery at all. The final division was between the temporal and internal maxillary and the branch which was small was really a continuation of the common carotid which did not divide anywhere. This anomaly of the arteries which supply the thyroid gland is interesting as it is of practical importance when removing tumours of that organ. With regard to the stomach condition Dr. Cunningham's experiments are interesting. He shows that the stomach is simply a dilated tube, which naturally appears to be small, not so large as the large intestine, and whether it is with our new methods of injection or hardening of the vessel we take the stomach by surprise as it were, in a state of rigor mortis and this condition results is a question I am not able to solve. Within the last few years we have seen a great many of these small stomachs, and they are remarkably frequent in the insane, many cases being noticed here being from Longue Point Asylum. An interesting statement made by Dr. Cunningham is that hour-glass stomachs are never congenital but are always acquired. Anatomists have always said that these stomachs were congenital, but it would seem that Cunningham has good ground for some of his assertions.

J. M. ELDER, M.D. I was very much interested in these anatomical specimens. With regard to the hour glass stomach it is a very much debated question whether this condition is congenital or not. There seems to be no question of the acquired variety and it is held by a fair proportion that there are congenital cases. The point which Dr. Shepherd has raised as to the finding *post mortem* of contractures in the stomach is well known, and it is a well-known statistical fact that these hour-glass stomachs are found very frequently in the insane; though I do not hold the starvation theory, that is these patients refusing food, as an explanation, for many such cases have been hearty

eaters. That there should be a redundancy of mucous membrane at the contracted point is not surprising, for if this is a contracture of the musculature of the stomach, then I think it follows that the mucous membrane must double up on itself in the manner shown in this specimen. I think a close microscopical examination of the tissues might throw some light on the question of this condition being congenital or acquired. With regard to the case referred to by Dr. Orr which I diagnosed, gastropasty was performed and the condition cured, the patient being well to-day. I must say that those who are still of the opinion that there are cases of congenital hour-glass stomach, have some facts on their side of the question, and notably the preponderance of this condition in the insane.

MASKED AND LATENT ORGANIC DISEASE OF THE STOMACH.

C. F. MARTIN, M.D., read the paper of the evening. Among the various conditions described as masking diseased conditions in the stomach he mentioned the following:

1. Cases of carcinoma of the stomach which remain latent for a considerable period of time, giving no symptoms of this condition.

2. Cases where a tumour is found by the patient long before anything else is complained of.

3. Cases which may run on for months indistinguishable from pernicious anæmia.

4. Cases where the growth develops rapidly with no symptoms whatever till a large part of the organ is involved, and then symptoms arise only two or three weeks before the end.

5. Cases where the symptoms come on suddenly even though the condition has probably been present for a considerable length of time.

6. Cases where the carcinoma remains latent or masked by the presence of hyperacidity.

7. The latency of gastric ulcer.

8. Cases where a perforation of a gastric ulcer is the first sign of its presence.

In considering these and other conditions Dr. Martin cited examples of each occurring in the Royal Victoria Hospital.

W. G. REILLY, M.D. Dr. Martin mentioned in his paper what is to me a very interesting point, that in some cases of primary cancer of the stomach there is a normal or excessive secretion of hydrochloric acid when there has been an antecedent history of gastric ulcer. At a recent meeting of this society a patient was shown in whom the pyloric end of the stomach had been removed, microscopical examination of the specimen showed to be cancerous. In this case for many months previously there had been an enormous excess of hydrochloric acid secreted.

From the history obtained it was believed that he had had a gastric ulcer 25 years previously and during the interval he had suffered from dyspepsia manifested chiefly by epigastric pain and eructations. Repeated examinations led me to regard the case as one of pyloric stenosis with subsequent dilatation of the stomach the complaints dating from the time when he was supposed to have had gastric ulcer. Operation revealed the presence of stenosis due to a cancerous neoplasm and also the scar of the ulcer. It is interesting to know that this patient has gained 40 pounds in weight since operation.

F. G. FINLEY, M.D. We all feel very much indebted to Dr. Martin for his paper this evening. I was especially interested in his cases of latent carcinoma in the stomach. I remember several cases in which the symptoms developed very late in life, in fact only a few weeks before death, two I have had during the past winter. The latency of gastric ulcer is now well recognized. In cases of perforation, preceding gastric symptoms are often very indefinite, and are not specially suggestive of ulcer.

LATERAL CURVATURE OF THE SPINE.

F. W. HARVEY, M.D. The report of this case will be found on page 387 of this number.

J. M. ELDER, M.D. It is a well-known fact in connexion with the causes of this spinal curvature that it often follows contraction of the pleura; and I think that before treatment is undertaken in these cases it would be well to know whether the curvatures were due to some old empyæma or other pleural condition, or whether it was due to some actual caries of the vertebræ. Where a spinal caries exists it may be questionable whether excessive movement is a wise procedure or not.

T. P. SHAW, M.D. In Dr. Harvey's cases the subjects had almost reached maturity. In looking over school children it is by no means unusual to find curvatures more or less marked of the spine, and it is quite conceivable that this is due to bad posture at school. In a recent paper by Dr. Tait McKenzie he states that the integrity of the normal spinal curves is protected against the onset of deformity by three lines of defense of increasing strength. (1) The muscles forming an advanced mobile series of outposts that can be brought into service powerfully but intermittently; (2) The ligaments, more resistant but less mobile; (3) The bones which yield to the influence of deformity only after the other lines of defenses have been carried. After the deformity has altered the bony structure any treatment must be more or less cosmetic in character, aiming at concealment rather than at complete correction.

F. W. HARVEY, M.D. With regard to Dr. Elder's mention of the

cause I did not touch upon the etiology of the condition because there was so much controversy on the subject. Apart from an apparent cause, that is pleurisy, empyema, or where one leg is shorter than the other, the great majority of cases which we generally speak of as lateral curvature are those where no definite cause can be found. No doubt in many of the earlier forms of lateral curvature of the first degree, bad posturing assumed at school, or at the desk, in weak, poorly nourished individuals may lead to these lateral curvatures.

NEPHRECTOMY WITH UNUSUAL CALCULUS. EPITHELIOMA OF THE SCROTUM.

J. ALEX. HUTCHISON, M.D. The report of the latter case will be found on page 316 of this number.

J. M. ELDER, M.D. I was present at this operation for nephrectomy and certainly the patient's condition was a very serious one. As to the calculus, it was found in the pelvis of the kidney and had taken on the cast of the calices, a not uncommon condition. I saw Dr. Shepherd operate upon just such a case many years ago and there a sinus persisted. At the subsequent nephrectomy a small calculus was found, which no doubt was the cause of the failure of the wound to close. There is no question at all that these kidneys become pyonephritic sacs, and one should always establish that the other kidney is healthy by catheterization of the ureter, before doing a nephrectomy. Two years ago I reported a case before this Society on whom operation had been done some months before. I cut in and found the whole kidney full of stones, and removed it. The patient lived for a few hours only. Post mortem showed that I had removed the better kidney of the two, the other kidney being more full of stones than the one removed.

With regard to the Chimney Sweep's Cancer. I have seen these specimens under the microscope, but have not treated a living case. There is no doubt at all that these epitheliomas are due to irritation, more mechanical than chemical, if one may so term it. Another case in point is the well known cancer in India on the anterior abdominal wall, caused by a hot stone being placed in the belt over the abdomen. However, with proper hygiene and proper care there need not be chimney sweep's cancer at all.

F. R. ENGLAND, M.D. With regard to the kidney case. Two or three years ago I had under my care a case of ureteral calculus impacted about one and a half inches from the bladder. The patient, a young woman, had suffered from kidney and bladder symptoms for eight years. The kidney was explored, (nephrotomy), only a small quantity of urine escaped daily through the wound in the loin; I therefore decided to remove the kidney rather than attempt the removal of the stone. The

kidney was found greatly atrophied, in fact only a small amount of kidney tissue remained. Here apparently when the ureter became blocked the kidney, being useless, soon ceased to functionate. In Dr. Hutchison's case the course run was quite different, the kidney instead of undergoing atrophy became dilated with a resulting hydro and pyonephrosis. The case of Chimney Sweep's Cancer is very interesting and as shown by Dr. Hutchison there may be only irritation of the part for some considerable time when suddenly a marked malignancy occurs, that is to say the growth takes on an active change and we get rapid dissemination throughout the body. I would like to know if the inguinal glands were removed. In operating in cases of malignant disease I do not think it wise to leave infected glands. Recurrence is very common after removal of cancer in situations such as the present and I think it is well in all cases to remove not only the inguinal glands but all lymphoid tissue as well.

THE CHARGES AND THE PRIVILEGES IN THE TORONTO HOSPITALS.

Canada Lancet, May, 1906.

Within the past few weeks the subject of the charges made by the various hospitals, and the privileges enjoyed by the patients in the different kind of wards, has been under discussion. This has arisen out of the demand made by the chairman of the Toronto General Hospital that, unless the city council paid over the \$200,000 on the understanding that patients must pay the cost of maintenance before they could secure the right to select their own medical attendants. It transpired that the cost of maintenance in the Toronto General Hospital was about \$10 per week. After much discussion it was agreed that some wards would be set aside at \$7 per week, in which patients could engage their own medical attendants. It will, no doubt, be interesting to know the rules of the various hospitals on these points.

1. The Hospital for Sick Children. In this institution there are two ward charges, namely, \$3.50 and \$9.00 per week. In all the public wards, at \$3.50, the patients have no voice in the selection of their medical attendant, either on or off the medical staff, regardless of whether under a city order or paid for. The member of the staff who attends cannot make any charge for his services, even though patient is paid for. With regard to the wards at \$9.00 per week, the patients may make a selection, but it must be confined to some member of the staff. If the patient is able to pay for such attendance the doctor in charge of the case may charge. No member of the profession, not on the staff,

can attend any patient in the Hospital for Sick Children.

2. St. John's Hospital for Women. In this hospital there are public wards at \$3.50, semi-private wards at \$7.00 to \$10.00, and private wards at \$12.00 and upwards per week. If a patient pays in a public or semi-private ward she may be attended by her own physician, under the permission of some member of the staff, who is really responsible for the case. In the private wards, patients can have their own doctor, if introduced by a member of the staff. The privilege of members of the profession, not on the staff, is one of courtesy, through a member of the staff. No ward is open to the profession except as introduced by one on the staff.

3. Grace Hospital. In this hospital there are public wards at \$3.50 per week. All patients in the public wards are assigned to members of the staff for attendance. These patients, whether under city order or paying for themselves, have no choice as to who shall attend them. But the member of the staff who attends a pay public-ward patient may charge for his services, if the patient is able to pay. There is no rule against charging such patients. In some instances public ward pay patients are placed under a certain member of the staff by request. If the patients pay \$8.00 a week, or more, they may select their own attendant, whether one of the staff or not.

4. St. Michael's Hospital. In this hospital there are public wards at \$3.50 per week. All patients in the public wards are assigned to members of the staff. If these patients pay for themselves, the member of the staff in attendance may charge if the patient can afford to pay. There is no rule to debar a member of the staff from charging a pay public ward patient. If patients pay \$7.00 a week, and upwards, they may select any member of the profession to attend.

5. The Emergency. There are two classes of wards, the public, at \$3.50, and the semi-private, at \$6.00 per week. In the former the patients have no privileges as to the selection of their medical attendant, whether they pay or are under city order. If they pay \$6.00 a week, they may make their own selection of attendant, either on or off the staff.

6. The Toronto General Hospital. All patients who pay only \$3.50 per week, or are under city order, are placed in public wards, and are attended by the staff of the hospital. In no instance is a member of the staff permitted to make any charge for his services to a public ward patient, even though he pays his way and may be able to pay a fee. There are some semi-public wards at \$7.00 a week, in which the members of the profession, not on the staff, may attend their patients.

In the semi-private and private wards the general profession have the right to attend.

7. The Isolation Hospital. There are three kinds of wards in this hospital, the public at \$3.50, the semi-private at \$7.00, and the private at \$14.00 per week. Every bed in the hospital is at the disposal of the profession, provided the patients pay their way in any of the foregoing wards.

8. The Toronto Western Hospital. This hospital has beds at prices ranging from \$3.50 a week and upwards, as public, semi-private and private wards. Every bed in the hospital is at the disposal of the medical profession, excepting such as are occupied by the city-order cases. These patients are under the control of the staff. There is no rule to prevent a doctor from charging a pay patient in a public ward.

It will be seen from the foregoing that the Toronto General, the Emergency, and Children's hospitals give free medical and surgical attendance to all public ward patients. They go further, and forbid a member of their own staffs charging pay public ward patients, even though these might be quite able to pay for such professional services as they receive.

We contend that this is entirely wrong. A hospital should do nothing that would deprive any member of the profession of a fee. No hospital should undertake to furnish free attendance upon patients who can pay. Many well-to-do people will select a public ward because it entitles them to free attendance. If they pay for their hospital accommodation, it should be left an open question as to the attendance they receive and what they may have to pay for it. It is quite a mistake to compel a member of any hospital staff to give his services free to a rich patient, simply because such person prefers a public to a private ward, in order that he may obtain free attendance. This is one of the lingering hospital abuses that must be corrected, but like many another abuse, dies hard. It is most likely to find its remedy through other hospitals, which adopt a wiser policy towards the profession.

It is not many years ago when the private wards were closed against all members of the profession who were not on the staff. Then the private wards were opened to the profession and later on the semi-private. For a doctor, not on the staff, to attend his own patient, that patient must pay \$6.00 a week in the Emergency, \$7.00 per week in the General, \$7.00 per week in St. Michael's, \$8.00 per week in Grace, and \$3.50 in the Western. No privileges are accorded the general profession in the Children's Hospital, and only by courtesy of a member of the staff in St. John's Hospital.

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PULMONARY ABSCESS AND GANGRENE.

BY

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This paper is based on the analysis of eight cases of Gangrene of the Lung from the available clinical reports of the Montreal General Hospital, and three cases in my private practice. I have also collected fourteen clinical reports of Abscess of the Lung from the same service. It was my intention to confine my paper to the subject of Gangrene of the Lung, but the intimate connexion between Abscess of the Lung and Gangrene of the Lung made it necessary to make a joint study of the two conditions.

Both abscess and gangrene are rare diseases. In the Pathological Records of the Montreal General Hospital, covering twenty-five hundred autopsies in twenty-eight years,—I found records of nine cases of Gangrene of the Lung, and of Abscess of the Lung there are but eighteen. These records go back to 1877. Dr. Osler reports the first case, one of gangrenous tissue, about a phthisical cavity. In 1620 autopsies at the Middlesex Hospital, London, there were seven examples of gangrene, and Withington found and discussed thirty-six cases of abscess and gangrene of the lung in the service of the Boston City Hospital for eighteen years.

Abscess invariably precedes the gangrene. Gangrene is never a primary affection, its commonest precursors are certain diseases of the lung, namely, pneumonia, phthisis, broncho-pneumonia, peribronchitis, bronchitis, especially putrid bronchitis, foreign bodies such as particles of food, coins. Other rarer causes are pulmonary embolism, traumatism, and gangrene may even be metastatic in origin.

The implantation of saphrophytic bacteria upon soil made receptive by these causes results in softening and necrosis accompanied by putre-

faction, when, in addition, the resistance of the body is reduced by want, alcoholism or diabetes.

These saphrophytic bacteria cannot alone produce gangrene, but are usually associated with some other organisms generally a pyogenic coccus, streptococcus, staphylococcus and a virulent pneumococcus. Other observers have found in the secretion from gangrene, spirilla from the mouth, the bacillus of malignant oedema, and one resembling the bacillus coli communis. The leptothrix pulmonalis was once thought to be the cause of gangrene, but the idea is now discarded.

Two forms of pulmonary gangrene are recognized, the circumscribed and the diffuse. Laennec first accurately described pulmonary gangrene, and his classification still exists. He looked upon it as a rare disease, and thought it approached the nature of the idiopathic gangrenes, such as anthrax, malignant pustule and pestilential bubo. He classified abscess of the lung under pneumonia, and stated that no organic lesion was more uncommon than a real collection of pus in the substance of the lung. Gangrene is more common in the right lung, and in the lower lobe, and in the outer portion of the lung, rather than in the centre. In the cases studied I found this to be true, with the exception that the focus was more frequently in the upper lobe. In abscess of the lung it followed the usual distribution. Gangrene tends to form a cavity with ragged irregular walls. Surrounding the gangrenous focus is an area of intense congestion and the lung beyond is oedematous. The pulmonary pleura is usually coated with a layer of fibrin. In some cases profuse hæmorrhage may occur from the destruction of tissue and the laying open of vessels. In the series of cases I have collected there were two examples of this condition. This description applies to the diffuse form of gangrene which is less common than the circumscribed, but may follow the latter. In the circumscribed form the destruction of tissue is not so widespread, and the resulting cavities are more sharply defined. Coincident with both these forms is an intense bronchitis, due to the irritation caused by the ichorous decomposing material, which is the source of much of the sputum. Abscess of the lung, when solitary, may attain the size of a lobe. If evacuation of the contents has taken place during life, the walls may be gangrenous and the contents foetid. If the mass be small and the patient in good condition a fibroid protecting wall may form, which, from within outwards, consists of a layer of necrotic lung and inflammatory tissue, a layer of solidified lung infiltrated with leucocytes and young connective-tissue cells and oedematous lung tissue. (Coplin).

Embolic abscesses are common and are often wedge-shaped. Delafield and Prudden described this form of abscess as involving the walls of the air spaces, originally through the transposition by the blood vessels of various forms of bacteria, especially the streptococcus and staphylococcus pyogenes. They call it pneumonia of hematogenous origin, or pyæmic pneumonia resulting in abscess of the lung. Abscess may be due to perforation of the lung from without. Pulmonary tuberculosis, at some time in its course, usually becomes a mixed infection with the development of abscess cavities and symptoms of a septic process. Abscess of the lung may be single or double, the latter being invariably pyæmic in origin.

Gangrene of the lung presents great varieties in its onset, acute or very gradual, associated with fever and local thoracic symptoms and often not pronounced, and only found at autopsy. (Strümpell).

Definite symptoms of local pulmonary disease precede the characteristic features of both gangrene and abscess followed by aggravation of the symptoms and the characteristic sputum. Strümpell gives a good description of the sputum. He says: "The penetrating stench of the sputum is most striking, a most repulsive, putrid odour infecting the whole vicinity." It separates if placed in a conical glass, into three layers, a greenish-brown, heavy sediment with plugs of tissue, an intervening thin liquid, and a frothy, thick layer on top. Microscopically, bits of destroyed lung tissue are found, also elastic tissue fibres, with granular matter, pigment grains, fatty crystals, leucin and tyrosin, cholesterin and the various pyogenic and saprophytic bacteria. The odour is communicated to the breath. There are differences of opinion as to the presence of elastic tissue fibres as a guide to diagnosis. Strümpell and Osler hold that it is always present. Traube thought the gangrenous process destroyed the elastic tissue, and Eigkman has shewn that certain bacteria evolve an elastic tissue dissolving enzyme, and it is possible that the disappearance of elastic tissue in pulmonary gangrene may be attributable to the action of some such substance. The typical sputum of abscess of the lung is pure creamy pus, without marked odour, but this varies, depending upon the emptying and refilling of the cavity and the development of an odour. It contains elastic tissue fibres and hæmatodin crystals.

Physical Signs:—Examination, as a rule, permits one to make out the site of the nodule, much depending upon the situation and extent of the gangrene. An infiltration of any size will cause dulness on percussion with bronchial breathing and mucous rales. If a gangrenous cavity has formed, signs of cavitation will be present, sometimes the

physical signs are due to the accompanying pleurisy with its distinctive features. The signs of pneumothorax may be present when rupture has taken place. Fluoroscopic examination may help to localize the focus, much depending upon the situation. Fever is a very variable element in both gangrene and abscess, depending upon the absorption of septic material. When the gangrenous nodule is sequestered and when the secretion can be freely emptied through the bronchi and no absorption, fever may be absent; as a rule it is of septic type ranging as high as 104 and accompanied by chills.

The Differential Diagnosis:—The affections which simulate both gangrene and abscess are: 1st. Bronchiectasis. In this case the sputum has some of the same characteristic features minus the elastic tissue and the absence of fever.

2nd. Putrid Bronchitis. Strümpell states that putrid bronchitis and gangrene often run into each other without any sharp boundary.

3rd. Rupture of an empyæma into the lung. The differential diagnosis between a ruptured empyæma will be the sudden expectoration of a large quantity of purulent sputum, possibly foetid, but not gangrenous.

4th. Putrefactive changes in the walls or contents of a tubercular cavity which can only be distinguished by the presence of the bacillus of tuberculosis.

The course of abscess and gangrene, when unsuccessfully treated, is that the patients pass into a marantic state and often die of exhaustion, septicæmia, the rupture of a blood vessel or broncho-pneumonia.

Treatment:—Guaicol has been used successfully as a pulmonary antiseptic. Lop reports three recoveries by the subcutaneous use of guaicol, and oil of almonds, sterilized at 100°, two grammes used one to four times daily.

Traube recommends the use of $\frac{1}{2}$ gram. of acetate of lead, every two hours. Osler considers the medical treatment very unsatisfactory, and recommends the inhalation of carbolic acid or guaicol; he says the same of abscess. Undoubtedly, if one is able to define the focus, surgical treatment is the only satisfactory course to pursue.

Of the 11 cases of gangrene, the clinical reports shew that eight were males and three were females. They were all in the middle period of life, 25 to 56 years of age.

There was a history of inebriety in four, and two were epileptics. There was no evidence of diabetes in any.

Of these cases five died. One recovered without operation, four were operated upon with complete recovery, and one left the hospital unimproved. This shows a mortality of 45 per cent.

A compilation of statistics give 80 per cent. mortality when treated medically, 40 per cent. when treated surgically, medical statistics including those unfit to withstand operation. Withington gives 16 per cent. of recoveries, including both diseases.

The cases now reported were treated medically with stimulating and supporting treatment, inhalation of formaline 1-3000, eucalyptus, creosote and lerebene, with creosote given internally in dose of 10 minims, three times a day, and a mouth wash of permanganate of potash.

Case I, 1893.—Service of Dr. Wilkins: Male, aged 25. An alcoholic subject. He had been ill six months before admittance. Three weeks before coming to the hospital he had recurring chills. On examination, dulness over the left apex in front and behind was found, and signs of cavitation with friction rub. The expectoration was profuse, thick and bloody. There is no report as to the microscopical examination of the sputum. He was treated medically, and died ten days after admittance.

Autopsy.—Anteriorly in middle zone of upper lobe a large gangrenous cavity was found with reddish-grey pus communicating with a bronchus; pleura thickened, and adherent over cavity. In this case the diagnosis had to be made from the autopsy report.

Case II.—Male, aged 47, marble cutter, 1894. Service of Dr. Finley. He had been in the hospital twenty years previously, for four months with cough and expectoration. Four months previous to admittance, after exposure to cold, the cough was increased and the expectoration became foetid, accompanied by chills and fever. On admittance patient was very weak. The right subclavicular area was dull, with signs of cavity on the left side. A dull area at back from fourth to ninth dorsal spine was found with signs of cavity. Characteristic sputum, 10 to 15 ozs. a day, three layers, greenish, with elastic tissue. Mixed bacilli, and stearic acid crystals; no bacilli of tuberculosis. The odour of the sputum, and the patient's breath was indescribable, the present writer remembering it well, being house physician at the time. He had daily chills. Temperature 96 to 103.4-5. He was treated with inhalations of creosote and a carbolic spray used, but the patient failed rapidly and died ten days after admittance.

Autopsy.—Firm pleuritic adhesions were found, with a small gangrenous cavity in the right apex. In the lower lobe, behind, a small cavity was found, surrounded by a consolidated area.

The history of this case, from its chronic character, suggests bronchiectatic cavities originally, becoming gangrenous later on.

Case III.—Female, aged 39, 1897. Service of Dr. Finley. Patient gave a history of inflammation of the lungs. A year following this

the expectoration became profuse and very foetid, accompanied by severe pain. Examination shewed signs of cavity in left apex in front. Sputum not reported on, breath horribly foetid. Patient died 24 hours after admittance.

Autopsy:—Gangrene of both lungs, putrid pleurisy, dissecting pneumonia.

Case IV:—Male, aged 56. Service of Dr. Finley. No history of alcoholism; no definite onset. Examination revealed dulness and rales at the left base posteriorly, sputum muco-purulent, greenish, very offensive, typical three layers, no report as to elastic tissue. Treated with inhalations of creosote and discharged improved.

Case V:—Male, aged 38. Service of Drs. Lafleur and Armstrong. He was a hard drinker and subject to fits. Six months previous to admittance, following a prolonged spree, he developed a severe pain in the side and began expectorating blood-stained greenish sputum. The present writer saw him in the out-patient department and made a diagnosis of gangrene of the lung. He was transferred to the ward where the sputum was collected, and measured 20 to 25 ounces in twenty-four hours. It was characteristic in appearance, but there was no elastic tissue or tubercle bacilli. On examination a dull area over the left lung behind the 5th to the 8th rib with signs of cavity and friction rub. The temperature ranged from 101 to 103½. He was transferred to the surgical service and a cavity opened measuring 2½ by 2½ inches with smooth walls opening into a bronchus from the upper corner. The pleural surfaces were adherent. The cavity was drained and the patient made an excellent recovery.

The clinical history points to this being originally an aspiration pneumonia, his habits being such that this might occur. The absence of elastic tissue and the smooth walls of the cavity suggest bronchiectasis, but the gangrenous odour of the sputum, the fever and the pleurisy point to its being gangrene.

Case IV:—Male, aged 33. Service of Drs. Molson and Armstrong. Patient an alcoholic, onset of illness ushered in with chills and rigors. Two months after this he had chills with profuse perspiration and foetid expectoration. There were signs of consolidation in the right lung, but difficult to localize. The sputum had a gangrenous, offensive odour and contained elastic tissue. The patient was transferred to the surgical service and a rib re-sected, and exploring needle withdrew air and fluid from the pleural cavity. The pleura was not opened and the patient left the hospital well.

Case VII:—1903. Female, aged 36. Service of Dr. Blackader. Eight weeks previous to admittance condition began as a severe cold

with night sweats. Eight days before coming to hospital she expectorated foul-smelling pus. There were signs of consolidation at the right base with blowing breathing and rales. The sputum was not reported on. The patient died within 12 hours of admittance.

Autopsy.—Lobar-pneumonia was found with multiple gangrenous cavities in the right lung, and acute pleurisy.

Case VIII:—1903. Male, aged 48. Service of Drs. Finley and Armstrong. No history of alcohol or epilepsy. Initial illness came on with a chill followed by daily chills and night sweats. Signs of cavity at the base of the upper lobe of the left lung. Fluoroscopic examination shewed a shadow in this region, and foul pus was withdrawn by the exploring needle. The sputum was described as frothy mucopurulent, and contained elastic tissue. The patient was transferred to the surgical service where, previous to operation, he expectorated 40 ounces of fœtid sputum. At the operation a large gangrenous cavity was explored and packed with gauze. The patient improved, but died suddenly a month later.

Autopsy Report.—Ulceration of the posterior left apex with erosion of a branch of the pulmonary artery.

Of my own series of cases the following is a record. Male, aged 45. Onset of illness, an alveolar abscess causing trismus. I administered ether to relax the jaw, and the removal of a tooth liberated a lot of foul smelling pus, and, a sub-maxillary abscess formed later which was opened. Three weeks later I saw him with a dry friction rub of the right side which improved after strapping. A week later a dull area developed with signs of consolidation and gangrenous expectoration. He was admitted into the Montreal General Hospital, where an exploratory aspiration was performed below the angle of the scapula and gangrenous pus was found. The expectoration was profuse and gangrenous, but contained no elastic tissue. He was transferred to the surgical service and a piece of the 9th rib excised. The pleura was much thickened. The pleural cavity was opened and the exploring finger passed into a space with smooth walls between the diaphragm and the lung filled with foul, almost faecal matter. Drainage was established and later the sinus was irrigated with permanganate of potash and carbolic solutions; the patient declaring that he could taste the solution. He was profoundly septic. He was isolated: the expectoration ceased, and after a residence in the hospital for three months was discharged, and is now in perfect health. It was difficult to conceive a more desperate condition than this man was in. This case suggests an infection of the lungs, either by aspiration in administering the anæsthetic or by metastasis. The onset was slow, nearly a

month, the abscess cavity ruptured into the pleura; the opening of the cavity into the pleura must have been small to drain so slowly.

My second case, male, aged 26, developed symptoms after the administration of ether for operation for the relief of double hernia. At the time the patient had a bad ozena. Pneumonia with pleurisy developed two days later in the right lung behind. The expectoration, at first rusty, became foetid and contained elastic tissue and pyogenic bacteria. An effusion into the right pleura developed, and I tapped the chest, withdrawing 20 ounces of straw-coloured fluid. At the end of the aspiration a dark, greenish horribly gangrenous discharge appeared mixed with air. The pleural cavity rapidly filled again, and the patient became profoundly septic, with delirium. Without an anæsthetic Dr. Hutchison incised an intracostal space, and inserted a large metal drainage tube and a great deal of dirty ichorous putrid fluid was drained away, the smell of which infected the whole hospital. The patient made a slow convalescence, the cough disappeared, and he is now perfectly well. This was a frank aspiration-pneumonia, becoming gangrenous, accompanied by pleurisy with rupture of the gangrenous abscess into the pleural cavity. I probably perforated the cavity with the needle. The thoracentesis was a last resort, and saved the patient, whose condition could not have been more desperate.

The third case of my service was a female, aged 26. Her illness commenced with an alveolar abscess in the upper jaw. The tooth was removed under an anæsthetic, the anæsthetic being prolonged preparing the teeth for bridge-work. A week later a pleuritic friction rub developed in the right axillary region, followed by signs of consolidation with blowing breathing. This was accompanied by a whitish mucopurulent foetid expectoration, but no elastic tissue. An effusion developed, and gangrenous pus was aspirated. Dr. Armstrong did a resection of the 9th rib liberating a large quantity of greenish gangrenous pus. The patient's condition was very bad, she was septic, with acute dilatation of the heart. The apex of the heart was in the anterior axillary line and the pulse not countable. Good drainage was secured, the expectoration ceased and the patient's convalescence was slow, but she is now quite well.

I look upon this case as one secondary to aspiration-pneumonia. The gangrenous abscess not being in direct communication with a bronchus; it was in the outer aspect of the lung, rupturing into the pleural cavity.

To summarize: Of the eleven cases of gangrene of the lungs, nine show a probable history of pneumonia. It is difficult to find the cause in the other two cases.

A detailed description of the 14 cases of abscess of the lung which I have studied, would exceed the limits of this paper. A summary must suffice.

Of the 14 cases, ten were males and four females, seven died. Two died after operation, one recovered after operation, one improved, and four left the hospital unimproved. This shows a mortality of 50 per cent. The ages range from 20 to 62. The patients were nearly all in the lower walks of life, and showed evidence of age, want or alcoholic excess, and long continued septic absorption. Elastic tissue in the sputum was found in half the cases.

A consideration of these cases teaches me that if the classification of these two diseases is of any service, greater care should be used by clinical reporters in the description of the sputum and its odour. The use of the word gangrenous is sufficient. The words foetid, foul, putrid, unpleasant, mawkish, should be left to descriptions of the odour of the sputum of abscess of the lung, putrid bronchitis, bronchiectasis and empyema. Also, with prompt clinical recognition and operation, gangrene of the lung, which nearly all writers look upon as a fatal malady, can be cured, and the danger of infecting the pleura from aspirating the gangrenous focus is not as great as writers describe, if surgical service is at hand to do a thoractesis. Sooner or later in most cases, the pleura becomes infected, either from rupture of the cavity or by contagion, and with good drainage one can expect a recovery, although slow, and relief, from one of the most dangerous and disgusting diseases to both patient and attendant that exists.

THIRTY-FOUR CASES OF TUBAL PREGNANCY

BY

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As the specimen shows very clearly the implantation of the placenta into the mucous membrane of the tube near the fimbriated end, I thought that it would interest the Society to hear a brief report of the case, more especially, as I think that many cases of tubal pregnancy escape diagnosis because they are not kept sufficiently in mind.

Mrs. E. L. age 28 was brought to my office on the 19th May by Dr. Aumont of Montreal. She complained of severe pain in the lower ab-

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domen, which she attributed to a miscarriage which she believed to have occurred ten days before coming to me, when she was six weeks pregnant, although she had suffered more or less for four years.

She gave the following history: She began to menstruate at the age of fourteen and was regular till marriage at twenty-one. She had four children, the last one nine months ago. The second delivery was instrumental. She also had two miscarriages between the time of the birth of the third and fourth children. Her bowels were constipated, she suffered from piles, and it pained her to pass water. She stated that she had some weak and giddy spells without actually fainting and she appeared pale, and had a weak pulse.

On examination the cervix was found to be moderately lacerated, the uterus was in good position, and not much enlarged; but at the back of the uterus and to the left there was felt a large, boggy and tender mass completely filling Douglas's *cul de sac*. The ovaries could not be distinguished, being probably imbedded in the mass. I told her doctor that I suspected a ruptured tubal pregnancy, and we advised her to come into the hospital at once, telling her that there might be a serious internal hemorrhage at any time necessitating immediate operation to save her life. She followed our advice, and after the usual preparations she was operated on on the 25th May in the presence of Dr. Aumont and with the assistance of Dr. Johnson. Her pulse was so weak that Dr. Howell who gave ether, urged me to make the operation as brief as possible, so for that reason I deferred the repair of the lacerated cervix until another time.

Operation: On opening the abdomen the diagnosis was confirmed, for the whole pelvis was seen to be full of old black clots as well as some recent bright red ones. On digging out the left tube the bleeding was quite free until a clamp was applied to the ovarian and uterine ends, after which the tube and ovary were removed. About ten minutes were spent in removing clots and stopping oozing by hot sponges. The right tube and ovary were then dug up out of a mass of adhesions, the tube being found to be closed at both ends and the ovary cystic. As the patient was in a precarious condition I did not venture to prolong the operation by removing them, but I took a minute to snip a piece out of the side of the tube when two drams of bloody fluid gushed forth. I also snipped pieces off the largest cysts so that they could not refill. The last stitch in the abdominal wall was tied twenty six minutes after the first incision. She went off the table with a pulse of eighty, but so weak that it could hardly be felt. After a normal salt solution enema and raising the foot of the bed the pulse gradually improved, since which she has made a rapid recovery.

Remarks: As this is my thirty-fourth case of tubal pregnancy operated on besides about eight others that I have seen in the practice of other operators, I have come to certain conclusions which I will place on record very briefly as follows:

1. That there is nearly always a history of long standing tubal trouble. The woman may have borne children during this time, but a woman can bear children with one tube impaired, and the other one almost closed. As a rule however there has been sterility for several years.

2. There is the woman's opinion that she is pregnant, although she knows there is something wrong about it, especially if she has had a child before. Generally there is severe pain in the side in which it is located of a cramping or tearing nature, due to the spasmodic efforts of the tube to rid itself of its unaccustomed visitor by violent peristalsis. When the rupture takes place the pain is severe and tearing.

3. Then comes the history of irregular hemorrhages which the woman takes for a miscarriage, and which so deceives even experts, sometimes, that a woman with a ruptured tubal pregnancy has been curetted, which of course under the circumstances is a most dangerous proceeding. (Two such cases have been reported by Dr. Vineburg of New York in the last number of *Annals of Gynecology*, in which the women promptly went into collapse and were only saved by prompt laparotomy.)

4. There is a mass felt in the painful side, which before rupture cannot be distinguished from a hydrosalpinx or pyosalpinx. But after rupture it gives a boggy feeling due to the clots of blood in Douglas's *cul de sac*.

5. There is generally a history of a fainting spell at the time of rupture due to the first gust of blood into the peritoneal cavity. This seems rather to be due to irritation of the great sympathetic than to the quantity of blood lost, for I have seen it when there were only a few ounces of free blood.

6. I am convinced that a great many women die every year from ruptured tubal pregnancy who are certified as having died from heart disease, and acute indigestion. Dr. Warren has diagnosed four cases, Dr. G. T. Ross three, and Dr. Sylvestre three among my thirty-four cases, and one was diagnosed by one of my fourth year students in the person of his landlady. One of Dr. Warren's cases and one of Dr. Ross's cases had been seen by at least three physicians each, before my friends were called in, and the trouble had been diagnosed as acute indigestion, although the women were dying with the abdomen full of blood and a pulse of 140. Two or three times I have heard quite prominent physicians say that nothing would happen if they were left alone. This is a

dangerous doctrine, for apart from the deaths from hemorrhage into the abdomen, there are those due to prolonged suppuration, while the decomposed foetus is coming away by the rectum, and the frightful mortality of delivery at full time of a living foetus by abdominal section.

If diagnosed early and operated on before rupture there is almost no mortality while even if operated on after rupture and with the abdomen full of blood nearly all recover. I lost my thirtieth case nine days after the operation from pulmonary embolism, and that was the only death in thirty four cases.

SLEEPING SICKNESS.

BY

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At present in England, the subject of Tropical Medicine, is attracting widespread attention, and undoubtedly experimental medicine is responsible for the greatest advances which have come to light within the past few years. The discoveries of Novy and McNeal are of much importance, the first, in fact, to obtain pure cultures of protozoa, maintaining trypanosoma of different species, alive. The recent discovery during the past year of protozoan parasites in the blood of different animals, in addition to many new species of trypanosoma, is of much interest, and more particularly owing to the close affinity of these discoveries, with Sleeping Sickness. So far as known, the first to observe "Sleeping Sickness" was Winterbottom, who wrote a brief paper in 1803, giving an account of the native Africans in the neighbourhood of Sierra Leone. The next reports of importance were those of Dumontier and Santelli, in 1868, but by far the most important and accurate account is by Corre, who studied the disease in the natives of Senegambia. In 1891 MacKenzie recorded a case of Sleeping Sickness in the London Hospital, and in 1900 Manson made a special record of two cases in Charing Cross Hospital, sent from the Congo, by Dr. Grattan Guinness. Dr. Mott, the neurologist of Charing Cross, worked out carefully the pathological histology, and defined the lesion as one of the nature of "Meningo-Encephalitis." Until within a limited period the geographical distribution of Sleeping Sickness was limited to West Africa. For some years it has also been known in the Congo as well as in several of the West Coast areas. In 1900 Cook discovered Sleeping Sickness in Uganda, since which date the

disease has spread widely towards the north shore of Victoria Nyanza Lake.

From the various reports of local observers, the epidemic area of Sleeping Sickness is confined to parts of Equatorial Africa. On the Upper and Lower Congo the disease has been noted in epidemic form, large numbers of the population falling victims to its influence.

As to the cause of this disease many hypotheses have been propounded in explanation, such as the intoxication of food, animal parasites and bacteria. Since November, 1902, Castellani frequently observed trypanosoma in Sleeping Sickness; in fact, he discovered trypanosoma in the cerebro spinal fluid of 20 out of 34 patients. According to Dr. Mott, the cerebro spinal fluid in Sleeping Sickness always contains trypanosoma, and likewise the juice of the lymphatic glands, by puncture, during life. He also states (Proceedings Royal Society, 1905) "the evidence of the existence of trypanosomes in the blood of animals dying of trypanosoma disease may vary very considerably."

Thus far there is a degree of doubt as to the exact pathological condition in Sleeping Sickness, which only time and further researches can decide.

The disease first broke out in the Province of Basoga, where it is supposed to have been introduced by Emin Pasha's Sudanese and their wives and followers, settled in Basoga. This disease had been epidemic in the Congo country, hence the supposition that a certain number were suffering from Sleeping Sickness in its incipient condition. In this section of country the disease assumed such a severe form that in a short time it reduced the population of Uganda to a minimum. The chief part of the nervous system influenced by it is the brain, the functions of which become gradually disturbed, so much so, that the mental attitude of the patient is soon noticed by the relatives: no desire to work, but rather to rest, owing to headache and pains, in the chest. This disease is quite different in the Foola country, and more so in the interior than on the sea coast, and, strange to say, children are seldom affected by it. Those giving evidence of the disease exhibit a somewhat ravenous appetite, eating much more than when in usual health, and gradually growing fat; this, however, lasts but a short time, as the appetite declines and the loss of flesh becomes quite evident. Squinting and convulsions frequently occur before death. The presence of glandular tumours in the neck is not uncommon in the incipient stage of development, and slave dealers avoid the purchase on that account, fearing the development of Sleeping Sickness. The disposition to sleep is so strong that the desire for

food is not marked. The whip, setons, or even blisters fail frequently to arouse the patient from the lethargic condition, which is generally fatal in a few months.

There is usually a dull, heavy, stupid look, and a characteristic slowness in answering questions, and a well defined shuffling gait. The temperature is remarkable, in the evenings rising to 101° F. and becoming subnormal in the morning. During the intervals of examination the drowsy lethargic condition steals on, and when he sits down the head nods, the eyes close, and thus he continues, until again aroused and questioned. As to the final issue, much depends on whether the disease will develop an acute or chronic form. Tremors of the tongue and arms are not uncommon, the general reflexes become lessened in intensity and drowsiness gradually passes into coma, and the patient passes away in a state of complete insensibility. In chronic cases the symptoms are slower in development, but usually eventuate in a like fatal issue.

Sometimes preliminary symptoms of an exceedingly slight character might be in progress for years, and, in fact, so feebly defined as to be almost sublatent, until very gradually the symptoms deepened in intensity, when the gait, speech, and food supply, entirely changed from the normal condition, gradually lead to profound coma and death. It is not generally accepted that this disease is caused by the entrance into the blood of a minute protozoan parasite; the *Trypanosoma Gambiense*, first described by Dr. Dutton, who while searching out this disease lost his life on the West Coast of Africa. In South Africa there is a disease known among cattle and other domestic animals caused by the *Trypanosoma Brucei*, and conveyed by, and communicated from sick to healthy animals, by a "biting fly," the *Glossina morsitans*. The idea followed that Sleeping Sickness might be produced in a like manner from a "biting fly." "Large collections of these biting flies were made, with the remarkable result that the distribution of Sleeping Sickness and of a biting fly, the *Glossina palpalis*, corresponded exactly with each other." Col. David Bruce, R.A.M.C., F.R.S., addressed the meeting of the British Association on this subject during the recent meeting in South Africa, and brought to light many interesting facts in this line of research, which cannot fail to be of great service.

Sleeping Sickness is not contagious, and, in fact, is only considered infectious in a limited sense. The disease is generally believed to be fatal, but in a few cases recoveries are vouched for.

Dr. Todd, of McGill University, recently returned from West Africa, having extended his observations over 2,000 miles of "The Free State,"

from the mouth of the Congo. He favours the idea that nearly all general glandular enlargements, without evident cause, such as syphilis or tuberculosis, are cases of trypanosomiasis. The palpation of these enlarged glands in the posterior triangle of the neck is considered sufficient evidence of the disease. The juice of enlarged glands, removed by the hypodermic needle is unfailing as to the production of trypanosomes, even when not found in the blood. Dr. Todd considers the sleepiness rather as a terminal sign, and not necessarily an unfailing symptom of the disease.

Information has just been received (*British Medical Journal*, May 5th, 1906) that one of the Commissioners sent out to Uganda in 1904, by the Royal Society of England, to investigate Sleeping Sickness, has been infected with the parasites believed to produce the disease. Two officers of the Royal Army Medical Corps, Lieut. Gray and Lieut. Forbes Tulloch, were the Commission. Last March an official telegram was received in London that trypanosomes had been found in the blood of Lieut Forbes Tulloch,* and there is widespread sympathy expressed for this young and zealous officer, suffering in the cause of science, and the members of the Royal Society of Canada join heartily in the hope that he may make a safe recovery. Since the discovery of trypanosomes, the parasite has been recognized in seven persons of English birth. Of these, three have died, and four are still living. From most recent data, a proportion of recoveries is to be looked for in the trypanosome disease of man, and the terminal and fatal condition Sleeping Sickness is not inevitable, and although a necessary factor in the production of the disease, not always followed by its development, and much work has still to be done before a positive opinion is arrived at, as to either the prognosis or treatment of this disease.

Sleeping Sickness has been considered by some experts a form of Beri-Beri. Such, however, is not generally accepted. Beri-Beri is, in fact, a peripheral neuritis, and develops rapidly. The knee reflex is absent in both and hyperæsthesia of the muscular system is a striking characteristic. In Sleeping Sickness these symptoms are wanting; the tremor, pyrexia, and lethargy, are marked features.

Professor Robert Koch recently investigated Sleeping Sickness for some months in South Africa, and favours the opinion that this disease has been known on the West Coast of Africa since the beginning of the last century. Sir Claude de Crespigny visited the hospital at Eutebbe, German East Africa, and considered that the disease is conveyed by the Tse-tse fly, only about two per cent. disseminating the fatal germ. It is doubtful whether the disease emanates directly from

(This officer has since died. Ed.)

the fly, or the latter conveys it from dead fish, and is spread like yellow fever, by mosquitoes. In large sections of Africa the horse is not seen, and cannot survive, owing to these insects, and the monkey at one time supposed to be immune, frequently succumbs, a victim to a like influence. Dr. Koch inclines to the opinion that Sleeping Sickness is a form of cerebro-spinal meningitis.

The present interchange of commerce with the numerous tribes in South Africa, from Britain, and nearly all Europe, makes this disease an important problem, not alone, as to the economic future of South Africa, but also as to the outlook, in the direction of public health.

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CASE OF PUERPERAL PHLEBITIS WITH CELLULITIS OF PELVIS AND ORBITAL CAVITY AND DESTRUCTION OF PART OF ONE EYE.

BY

A. LAPHORN SMITH, M.D. and RICHARD KERRY, M.D.

Mrs. F., aged 32, born in Canada, menstruated at 14, normal till marriage at 22; had five children, last one on 16th June, 1905. The first and second labours were difficult, requiring instruments, but the last three were perfectly normal. She made a good recovery from all her confinements, but especially after the last one which was so easy that the child was born before the doctor arrived; and she felt so well that she was up and around at the end of ten days. She continued to feel well until the nineteenth day when about four p.m. she was suddenly taken with chills, and at the same time her left leg began to swell and be painful. Then her abdomen began to swell. She was conscious until the 27th day, when she lost consciousness for several weeks.

When she recovered consciousness she was quite blind in her left eye. A few days later or about seven or eight weeks from the beginning of

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her illness her left eye began to swell until it projected from the orbit. Within a week the orbital abscess broke and great quantities of pus poured out from under the upper lid. Then her eye sank back again in the orbit, but she remained quite blind. The leg gradually got better, but both legs remained drawn up at right angles with the thighs. In order to overcome this, weights were put on for a month, but they failed to straighten the legs. Then an abscess formed in the cellular tissue of the left side of the pelvis, which pointed in front above Poupart's ligament, and behind just above the sacro-iliac joint. As her temperature had kept high for four months, and as she was rapidly going down hill, she was brought into the city on a mattress in a baggage car, and entered the Samaritan Hospital under my care.

On examination I found the uterus, ovaries and tubes perfectly normal and quite distinct from the tensely fluctuating swelling on her left. A few days after her admission a free incision was made into the abscess cavity above Poupart's ligament, and another over the most prominent point of the swelling at the back. About a pint of pus, and a large decomposed blood clot about five inches long and as thick as the first finger was removed. The cavity was washed out with perchloride and plain water, and a large drainage tube with many holes in it was passed from front to back, rendering it easy to keep the cavity clean with peroxyde of hydrogen. It required several weeks before it was safe to remove the tube, although her temperature fell at once after the opening and draining. A nurse was set to work massaging and stretching the contracted hamstring muscles and eventually she was able to walk at first with crutches, then with a stick and finally without any help. During her stay in the hospital she gained about forty pounds.

Dr. Kerry kindly examined her eye and will give his report. The interesting features of the case were: 1st That her labour was normal, that she got up on the 11th day, and did her work until the 19th day without any evidence of infection; that something happened to block up the iliac vein; and later probably the ophthalmic artery. It is evident that an embolus could not get from the iliac vein to the ophthalmic artery, because it would have to go through the capillaries of the lungs. Therefore I think it more likely that she had an endarteritis with vegetations on the heart, and that one of these was carried up to the ophthalmic artery. Another curious thing was that the left leg and left eye were affected. Why not the right? As for the abscess in the cellular tissue of the pelvis was it due to infection from the iliac vein? Did the vein suppurate and discharge its clot into the cellular tissue? We seldom see cases of phlebitis of the legs now and still more rarely have an

opportunity of feeling the pelvic cellular tissue as I had; being able to explore it with my finger, when cleaning it out. We had seriously thought of having her legs straightened forcibly under anæsthesia, but she told us that her mother had had the same difficulty after a long and severe illness, but that they had been straightened by massage and exercise.

Playfair in his chapter on "Puerperal arterial Thrombosis and Embolism" says: "The same condition of the blood which so strongly predisposed to coagulation in the vessels through which venous blood circulates tends to similar results in the arterial system. These, however, are by no means so common and do not, as a rule, lead to such important consequences." The subject has been little studied, and almost all our knowledge of it is derived from a very interesting essay by Sir James Simpson. The latter records several cases of sudden supervention of blindness with destruction of the eyeball, which he attributed to the occlusion of the ophthalmic artery, the function of the organ depending on its supply through the single artery. In our case the cellular tissue and back of the eyeball were undoubtedly destroyed in this way, but the cornea was probably saved in perfect condition owing to the blood supply from the conjunctiva, and the latter being supplied by free anastomosis with branches of the facial artery.

We have stated that it is unlikely that an embolism big enough to block up the ophthalmic artery could get through the capillaries of the lungs, but Weber and some later pathologists claim to have proved that minute infected emboli may have been through the lung capillaries. Playfair claimed that localized inflammations occurring a short time after delivery are directly produced by the infected blood, while those occurring after the lapse of some time as in the second or third week, depend upon embolism.

The destruction of the cellular tissue in the pelvis may have been due to infection by cocci traversing the wall of the iliac vein, or the suppuration and bursting of the abscess into the cellular tissue. Or again minute emboli may have been washed off the valves of the heart and been carried into the small artery supplying that particular part of the pelvic cellular tissue just as the cellular tissue of the orbit had been necrosed.

DR. KERRY'S REPORT ON DR. LAPHORN SMITH'S CASE.

The orbital abscess was in this case accompanied by involvement of the eye-ball. On examination, which was made after the disease had run its course, the eye was found shrunken, about three-quarters of its

normal size, and quite free from active inflammation or pain. The tension was sub-normal. The pupil was occluded, small and regular. It is interesting to note that the anterior portion of the eye remained apparently normal after the disorganization of the posterior part; the cornea being clear and bright and the anterior chamber and anterior surface of the iris showing no change. There was no perception of light or of phosphenes.

The infection travelled from Tenon's space along the lymph channels surrounding the "*venæ vorticosæ*," setting up severe iridocyclitis and possibly causing a purulent focus in the vitreous chamber. After the breaking of the abscess, this was followed by a subsidence of the inflammation and partial absorption of the contents of the vitreous chamber or the posterior part of the eye, which closed soon afterwards.

As the posterior part of the uvea with the nerve endings in the eye were apparently destroyed, as there were no signs of irritation and as shrinkage of the ball did not appear to be progressing interference was not deemed necessary. The patient was advised, however, to report promptly should trouble occur, and warned of the danger of delay.

A CANADIAN HOSPITAL OF THE 17TH CENTURY.

BY

JOHN MCCRAE, M.D.

Montreal.

The greatest river rises in a tiny spring somewhere, and the hospitals of Montreal of to-day, imposing and costly, had their forerunner in a miserable and tumbled down house in La Flèche, where three servant maids ministered to the sick. La Fleche was a little town of Sarthe on the Loire, and therein dwelt a civil servant, one de la Dauversiere, who was its first patron: the father of six children, the historian remarks "God called him to greater things," and he began the foundation of an order to tend the sick in Canada for the honour of St. Joseph and Our Lord. Moved by a vision, de la Dauversiere threw himself heart and soul into his task, and it is stated that the first assistance he obtained for his work was two deniers given by a child, and the second was one denier from a poor woman: ready-tongued tradition has not failed to tell that the former was the Christ-child himself, and the latter the Virgin: in 1636 under these auspices, the order was founded, and inextricably woven with its history, and with the story of the hospitals of Montreal is the name of Jeanne Mance, although at this time de la Dauversiere knew not even of her existence; in a few years from the founding of the order, Mlle. Mance was its sole and guiding spirit.

In 1606, or near it, Jeanne Mance was born at Nogent-le-Roi, a village of Haute Marne: at the age of thirty-four her mother died, leaving her an orphan free to do her own will, which was to go to Canada. Discouraged by her confessor, she went to seek more enthusiastic advice at Paris. The gossips must have had their little spites to propound, for her biographer says, "Many imagined that Jeanne" (who was fair of body it seems, as of soul) "who lacked none of those external advantages which could make a person sought after in the world, would yield to the temptation of going to be admired at Paris." With far other thoughts, however, she went, and after some encouragements, not without discouragement, she set out for La Rochelle to take ship. On her arrival she fell into kind, but Huguenot hands: "Father Laplace had her conducted elsewhere, without her even asking it of him," and for that forbearance, even a heretic must hold her in honour.

While these preparations were in making, Abbé Olier, founder of the Company of St. Sulpice and de la Dauversiere had met; each being by Heaven warned by the same vision, they knew one another and one another's affairs without the intervention of any third person, though they had never seen nor heard one of the other. It is a little monotonous that the same thing occurred with Mlle. Mance and de la Dauversiere; but these three suited one another exactly in the matter which was dearest to them all, and Mlle. Mance decided to sail to Montreal; de la Dauversiere was provider, and he and Father Olier formed the Society of Our Lady of Montreal, acquired the Island of Montreal and the services of one Paul de Chomedey, Sieur de Maisonneuve, a gallant and godly soldier, who had seen his first battle in Holland at the age of thirteen and was now a young man in the early prime of life, possessed of high ideals and what was more essential for a life in the New World, keen common sense.

It must have been a heart-sick little colony that sailed from La Rochelle that spring morning in 1642 in a clumsy little ship that sailed slowly, rolled and tossed out of all reason, smelt of bilge water, and gave no one room to more than turn on its decks, to say nothing of its dark and dismal hold, where port holes, light and air were equally unknown. Mlle. Mance had the support of two soldiers' wives, and a stow-away girl of birth, who had fled from home with ideas akin to Mlle. Mance's own. After a prosperous voyage, they reached Quebec, but had to wait the arrival of two other vessels, which had been storm-stayed: even in this little corner of the world, jealousy had sent out its skirmishing lines, and their reception in some ways was a little cold, for the authorities at Quebec resented the establishment of a near-by post which was not under

their authority. Mlle. Mance was taken in by some kind-hearted family and spent a winter of usefulness in many humble ways. On the 6th of May, 1642, the start was made, and eleven days later they sailed past Bout de l'Isle and came in sight of the place chosen a few years before by Champlain, for the establishment of a colony.

At this time Hochelaga was an Indian village of considerable size, and it is possible that the remains of Champlain's stockade were still standing: when the colonist landed, it is probable that they did so at the foot of St. Mary's current, in which the progress of their deeply laden boats would be slow and difficult; the historians of Mlle. Mance tell much of the building of the shrine but nothing of the construction of the dwellings. In the hands of Maisonneuve the work was quickly undertaken, and the slopes of Mount Royal resounded to the axe, so that by winter there was at least a habitation for the pioneers. In December of this year, the river rose upon its banks (the biographer must bear the onus of an error in the date), and the Sieur de Maisonneuve, now anxious for the fate of his houses, planted a cross at the edge of the rising water and laid himself under a vow should Divine power keep them safe. The foot of the cross was over-flowed, the water rose to the very doors; another inch would destroy the powder magazine—and the water began to recede. True to his vow, Maisonneuve carried on his shoulder, a heavy cross up the devious ways on the slopes of Mount Royal and planted it on the highest point of the hill, where Mass was said and the communion dispensed—a glimpse of the mediæval crusades in prosaic Montreal.

In October 1644, the eighth to be exact, the hospital was opened, the original Hôpital de l'Hotel Dieu de Montreal, a structure modest enough. Sixty by twenty-four, of axe-hewn beams, the crevices filled with mud, the roofs of slabs, if not of less pretentious material, there were yet therein two rooms for the sick, a kitchen, a room for the servants and one for Mlle. Mance, the founder and director. A chapel, 10 feet square, was built of stone adjoining it, and in the following year, arrived from France, the furnishings, first for the chapel, then for the hospital rooms, as well as medical stores and surgical instruments, and the hospital had for endowment five cattle and twenty sheep.

Where, one may ask, was the physician, considered now an indispensable adjunct to a hospital? As yet he did not exist. Several years later, when Mlle. Mance fell on the ice, dislocated her wrist and broke her arm, the best medical skill at command was that of a priest, who had made some study of the art. But what tender, devoted and self-sacrificing care could do, Mlle. Mance and her faithful assistants gave—for in these attributes the colony was truly rich, and they gave alike to the Indian and to the colonist.

A French lady, M. de Bullion, at this time in an anonymous way, had become the godmother of the hospital, and she donated 42,000 livres, equivalent to one-fifth as many dollars to-day, of which 6,000 were consumed in building and the remaining 36,000 formed an endowment fund.

No sooner was the hospital built than its usefulness became apparent, for many of the colonists were wounded by the Iroquois: instead of one servant, Mlle. Mance soon required three, and to safe-guard the hospital against the attacks from the Indians, a palisade was built to surround the hospital and its stables: another sick room was taken from the various chambers allotted for other purposes, and by the time all this was done, the furnishing and building had cost 30,000 livres, but the generous woman who had undertaken its support at once gave this amount in addition.

If one could have landed on the north shore of the St. Lawrence in 1648, he would have seen dense forest stretching up to the top of Mount Royal, reaching far up the river to the left and down to the right, broken only by the clearings whereon stood Indian Hochelaga and French Ville Marie: to the right, the tepees of the Hurons, with a large population of children and dogs, looking busily active, without being industrious: to the left, separated from it by a half mile belt of woods, stood the two tiny fortresses, the hospital and the main dwellings: where the trees had been cleared, stood little fields of maize, and over all brooded peace. "The brave colonists," says the historian, "had more confidence in the prayers of these saintly women than in the swords and muskets of the soldiers," but for all that, the Sieur de Maisonneuve was not the man to let the powder get wet, and there is little doubt that the Iroquois laid more stress upon the muskets.

Yet, in 1650, it was apparent that all was not right with the little colony: its numbers had been depleted by the arrows of the Indians, some had lost heart and gone home, there were shadows of internal dissension, money was scarce, supplies few and Mlle. Mance went back to France, where she succeeded in strengthening the company and obtaining the necessary funds. Before her return, the Iroquois made a great attack upon the Hurons, of whom those who were not slain, fled: made bold by their success, they determined to extirpate the colony of Ville Marie, and by frequent, merciless attacks, they killed many of the colonists, torturing their prisoners, and burning the outlying houses; the hospital was now flanked by two redoubts, each of which was furnished with a piece of artillery, and defended by all the available arms. One day a colonist and his wife were pursued towards the hospital stockade,

and the woman, falling behind, was captured: the husband turned back to share her fate: three colonists running to their assistance were suddenly attacked by 40 Iroquois who had lain in hiding close to the hospital; the men at once ran for the main entrance, where Mlle. Mance waited to open the door to them: as she closed it behind the last one, his cap was shot off, but the little garrison was safe. One who had taken to a tree, by kicking his assailants, succeeded, in this inglorious way, in saving his life, though at the expense of a partial scalping: thanks to Mlle. Mance's good care, he lived, and though only partially thatched, had 14 years of useful life. On the 26th July, 1651, the hospital was attacked by 200 Indians and defended by 17 soldiers: the Indians crept up by a ditch, until they reached what is now St. Paul street, whence they descended upon the little stockades. From 6 o'clock in the morning the fight was sustained for 12 hours, and the only loss to the garrison was sustained by the bursting of one of the cannon. So frequent were the attacks upon the hospital that the dwellers there were compelled to take refuge in the main fort, since the hospital could no longer be properly garrisoned. The safety of the whole village being thus imperilled, the urgent necessity of reinforcement from France was evident, and Maisonneuve undertook the journey, the hospital endowment furnishing the money. The attacks of the Iroquois continued, till but 17 men could bear arms: a temporary reinforcement of 10 from Quebec enabled them to tide over the difficulty till finally Maisonneuve led back more than 100 men. Now it was possible to extend the hospital, and a new building 24x30 and 20 feet high was built: at one end of this the church was built, 50 feet long, with nothing less than a belfry and two bells. By the spring of 1654, Mlle. Mance was able to move back to the hospital, and its sorely interrupted work once more went on. There is no doubt that the salvation of the colony was due to the judicious employment of the hospital funds to the common welfare.

Of the hospital itself, little can be told for the next few years: in 1657, a fall on the ice broke Mlle. Mance's arm and dislocated her wrist, the latter injury not being recognized for six months; by this time the arm was useless, became atrophied, and subjected her to so great pain, that in the crises of pain, it required four strong men to hold her. Two years later the arm was miraculously healed by being touched by the casket containing the heart of M. Olier: of the cure there is much excellent evidence: much medical evidence is adduced to show that the arm was considered incurable by the Paris surgeons who saw it: at this late date, a sceptical scribbler may be forgiven if he lays stress upon the "four strong men" incident.

While these things were transpiring, the sisterhood of the Ursulines at Quebec as showing signs of an anxiety to have control of Montreal, and Queylus, who was a Sulpician, strongly asserted their claims, urging that the Sisterhood of St. Joseph of La Flèche was poor and far away: Laval on his arrival supported this view, but Mlle. Mance, applying again to M. de Bullion, was successful, and an endowment for the Sisters of La Flèche was founded, and the Company of Montreal undertook to send the nursing sisters to Ville Marie. After difficulties over passage money, an epidemic on board ship, and many other obstacles, not least of which was the will of Laval, at length the sisters from La Flèche were allowed to take over the charge of Ville Marie, although the sisters from Quebec had been unremitting in their endeavours to gain a foothold.

Now that everything seemed to go well with the sisterhood of St. Joseph at Ville Marie, arose a new difficulty. The good de la Dauversiere, he of the large family and the call to greater things, died, and it was found that he had used 22,000 livres of the money of the hospital at Ville Marie to repay certain shortages in the Royal accounts; his losses were due to a certain shipwreck,—in fact, he had speculated and embezzled. The historians are very loath to more than mention this little slip, and with them, de la Dauversiere's odour of sanctity still exhales itself. The hospital funds paid but a small fraction of the royal shortages, but took away the entire substance on which the hospital subsisted, and the evil days were again upon them, the more so as Laval withdrew the favour he had grudgingly given, and refused to sanction the establishment. Reduced to extreme poverty the hospital now was: the sisters were compelled to sell their spare clothes and shoes for corn, pork and vegetables: their food consisted of the coarsest of bread, pork once a day or once every two days, the vegetables they could raise in their own garden, and as a luxury, a fish: other meat they rarely saw. They suffered extremely from cold, and one of the duties of the night watcher was to throw out the snow that blew through the crevices between the logs. At intervals the Iroquois attacked the village, and ambushes were often laid near the hospital, to seize the sisters as they went in the night to the care of the sick, but always unsuccessfully. To crown all, in 1663, a severe earthquake, lasting five minutes, terrified the community: the hospital patients were carried out and laid in the snow, but there was no great damage wrought—on the contrary, a great access of piety in the whole community was the result. In the hospital, an Indian attempted to strangle the nursing sister but was prevented by the assistance rendered her by the other patients. To avoid displeasing the Indians who were friendly, the sisterhood at times partook of sagamité.

and that this was not the least of their ills, a description of sagamité will show. "In a large pot on a tripod, was put corn and water. The Indians added to this the fattest of their dogs, after grilling them over the coals to remove the hair; cats, bear, beaver and other animals were also used. The whole was boiled together for about half a day, then prunes and raisins (wild varieties) were added, it was cooked for two hours more and then distributed."

In 1663, a severe epidemic broke out at St. Anne, in the Royal garrisons; 40 out of 60 men were stricken, and many were brought in to the hospital, but despite care, there was great mortality. Of the following uneventful years we know nothing: we can picture Mlle. Mance, now grown old, still engaged in her active work, which she never completely relaxed; doubtless she was a familiar figure in the village to everyone, and doubtless also much loved. In 1673, she died as she had lived. Her heart, as the custom was, was kept in the church, with certain small remembrances of her, but in 1695 fire destroyed the last trace save what exist in memory and example, of a noble and self-sacrificing woman.

ADDRESS TO THE GRADUATING CLASS IN MEDICINE OF MCGILL UNIVERSITY.

BY

WESLEY MILLS, M.A., M.D.,

Professor of Physiology.

Speaking for the Faculty and myself, I must first of all congratulate you who have become graduates in medicine to-day. Your position could not have been attained without the exercise of much self-denial and many other qualities that tell in the formation of character. Some important changes, which we look upon as improvements have taken place either during your undergraduate period or so close to it that you could not but feel their significance. You were almost the first to work in the new laboratories; and, in your period, new hospitals have arisen and the old ones have been improved, with still greater progress in contemplation. You have been in sight of that conflict which enlightened and liberal medical sentiment waged against provincial narrowness, when our Dean endeavoured to remove the stigma that attaches to our country because medically it has been a house so much divided against itself; and if there was a check in the achievement of an object so desirable that one wonders how there could be any two opinions about its desirability,—such check can in

the nature of things be only temporary and, let us hope, of very brief duration. Unless the medical men of this country are either forgetful or ungrateful, the name of Thomas Roddick should go down in the medical history of Canada as one of the profession's most deserving champions.

During the past ten years, too, a change has been gradually coming over the University in the direction of greater unity with more of the University Spirit. Medicine has been the last of the faculties to avail itself of closer union. As all these changes have been brought about through the legitimate use of the higher methods of persuasion—with appeal to reason—and without loss of faculty individuality so far at least, we may look with satisfaction on a result in which the Principal of this University has played the chief part. You, gentlemen, have been university students as none before you in medicine; and if to-day I rather speak of universities than medical schools it is hoped that a certain fitness in things may appear.

We have so often on such occasions as this heard the note of satisfaction and jubilation that, perhaps, it may be well to consider some of the aspects of medical schools and universities which may at least give rise to question if not anxiety. Within a very few years changes have taken place in medical education so radical that to some there seems to be a danger of casting aside much that is good in adopting the new. This convocation dress of yours, while admirable for the occasion, is scarcely the best conceivable for the performance of an operation or even the ordinary everyday work of the medical practitioner. So there is the danger that universities put too much faith in buildings and equipment,—the obvious, the external—and too little in the invisible spirit of man. Our laboratories may be beautiful, well equipped, scientific playhouses, yielding little to the average student that will really tend to make him a man of intellectual fibre. There is danger of scientific formalism; and hospital ward-work, so-called, may easily degenerate into a mere exercise of the senses, seeing and hearing, unless vitalized by those guiding principles that raise the doctor proper above the untrained nurse. A student now has so many advantages, so much done for him, that he is apt to become a mentally feeble and limp organism as the result of feeding with pre-digested food: not to mention the failure in development of individuality and originality, on which more than anything else a man's value in the world depends.

The modern pathology is so new and so beguiling, if not fruitful, that there are those who would turn medical institutions, even hos-

pitals, into schools of pathology; and with the bugbear of "If you do not do this and that you will be behind the times," scare faculties into expenditures which induce a financial anæmia from which all other departments suffer. Others would convert medical colleges into schools for clinical medicine. They would have the students virtually live in hospitals.

The students, of course, like these new proposals. The laboratory engages the hands and the eyes and this in itself must naturally be pleasant to young persons. It is agreeable to talk to patients about their ailments and hear their life-story generally; and it is still more agreeable to commune with the amiable and accomplished nurses. But to take down half a dozen books from a shelf in the solitude of one's own room and for two hours with pencil and paper in hand, read, analyse, compare, apply,—all this is another story,—and yet without just such work as this laboratories and hospitals will be vain. Such is written in the very brain and mind of man. Of the three divisions of the brain cortex, the sensory, the motor, and the associational, the latter in the brain of man is the largest and most important: but it is just this which the laboratory and hospital least cultivate, though they furnish the *material* for the work of the higher part of the brain,—that which is concerned in the more elaborate processes of thinking.

Let me not be misunderstood—laboratory work and hospital work are absolutely necessary for the education of the student, but they are only part and not in themselves final. The best laboratory for any man is that inexpensive and highly portable one that he carries beneath his hat.

Battles have been planned, if not won, in the study, and there it is that all great things begin. By "study" I mean really that place, wherever it may be, in which a man thinks best—where he isolates principles, makes generalizations, and constructs plans for those manipulations that make conclusions possible. All the great advances in medicine have been originated in such studies. The laboratory and hospital have been testing houses and demonstration rooms, checks, definers, and much more—indispensable, but not all and not the chief thing as we are inclined to believe to-day.

What the medical students of McGill now need to take heed to is to do the one (laboratory and hospital work) and not leave the other (study work) undone.

Gentlemen, this day do we remember our faults before you: at least, I speak for myself. We have treated you for four years,—your most developing years, too—very much as if you consisted of pure intel-

lect only — and we have attended so well to this that we have given you very little opportunity to do anything for yourselves. Yet, it is just the part a man takes in his own development that counts above everything else. As one of your number has well expressed it, "The teachers in medical schools act as if they thought that all a man should know for the rest of his life must be taught in the four years of his undergraduate course." The result is mental dissipation, no deepness of earth, little originality or even individuality.

Determining a man's value before his fellow students by such processes as those we term "examinations" is, to my mind, a most crude and unsatisfactory method, responsible for both moral and intellectual defects so great as might well make us pause. It would be well if we could in universities bring education more nearly up to our best knowledge of human nature and not be forced to constantly bring it down to meet the standards of the commercial world. It becomes a question as to whether universities on this continent at all events are any longer chiefly centres for the fostering of the humanities, temples for the cultivation of the highest ideals, the noblest aspirations, the perception of the beautiful in conduct, in art, in nature. Are they not largely mere technical schools where young men congregate to learn how to get a "better living," in the vulgar sense, than they otherwise could obtain. Parents cast about and ultimately send the boy to college, as an axe is sent to the grinder's, to get a sharper edge put on him that he may the readier cleave his way in that material world in which men without great exaggeration may be said now to live, move and have their being.

This boy, like enough, long ago lost that love for real knowledge with which every child is born. He discovered that the great thing at school was to get promoted, and that the idea of advancement—getting ahead of one's neighbour—is the purpose of life. Why should he believe differently or act on other principles at college? So that it is common to find the student looking solely to being able to pass examination with a minimum of knowledge and a maximum of invention as to how to accomplish this — the great end.

The chief essential — *a thirst for knowledge* — is absent in a large proportion of cases, or it is quite subordinate to the action of other forces. The young student has already observed that the majority of those around him seem to believe that a man's life really does consist in the multitude of things which he possesseth; and, as they seem to cherish this creed with all their heart and soul and mind and strength why should he not also? Literary taste, the inspiration from poetry,

the deep joy of gazing at a noble work of art, or the still more beautiful works of nature, the happiness from finding the unutterable expressed in music, the capacity to feel the beauty of a self-sacrificing life, the perception of the fitness of things taught by philosophy and science; why should he develop these? In themselves they have no market value, and gold is the only standard most of the time. It is not as of old—"Get wisdom, get understanding," but get riches and get the understanding of how to do that better and more quickly than other people. If any one doubts the influence of these material ideals let him take up a college paper—remember, I speak of universities on this Continent, not specially of this one. What will he find in that paper? Accounts of athletic contests, of dances, and similar social events interlarded with witticisms--maphap couched in doubtful English. And McGill has a magazine which would be a credit to any university, but it is not read by the students, and not written for by the graduates. For its support it is dependent on the literary contributions of a very few people, mostly academicals.

A man may take a degree at any American university without giving any evidence whatever of speaking his own language "with neatness, elegance and propriety;" on the contrary, he may so utter his words as to be with difficulty understood, and he may insult the ear with an abominable nasality of tone, and still become a B.A., M.D., or Ph.D.

But all this is but a reflection of the big world outside the college hive. The great man of to-day is the one who can change or move matter; all others affect the masses but little, if at all.

You, Gentlemen, may any day see the Montrealer clothe himself at great expense in purple and fine linen, then complacently walk through about the worst kept streets in the world—illustrating the combination in the one person of a marked tendency to personal luxury and a conspicuous lack of public spirit.

There is a widespread æsthetic taste. We attain at a great outlay in time, money and energy to what is at best mere personal or domiciliary prettiness while that real abiding beauty, the fruit of genius, alone is all but unknown. People are too busy to stop to drink at that vivifying spring that never dries up, the beauty of nature.

In this whole vast country of ours I cannot point you to one really fine collection of statuary or paintings; and there is a corresponding dearth as regards the drama and music—indeed, of all forms of the higher art.

Gentlemen, if you prefer Shakspeare to the *Sporting News*, the Ninth Symphony to Ragtime, the Sistine Madonna to the beauties that adorn

our fences, it is not because either your country or any university has greatly concerned itself in the matter. To my thinking a state of mind such as that referred to marks a man as barbarian whatever his intellectual sharpness as such may be. Such an one is not even half developed.

I grant that this is not inconsistent with the building of bridges, the management of railways and the diagnosis and treatment of medical cases, but if a man is meant to be more than a mere machine well adapted to manipulate matter, if there should be capacity to appreciate such things as some in all ages have felt necessary to their being then is a life thus spent more or less of an arid waste.

And we jump the life to come in our hot haste to pile up matter. Is it not just possible that the whole drama does not end here, and that there may be other acts to be played elsewhere, for which a life spent in devotion to materialism may not be the least possible preparation. But, perhaps I should apologize for referring to this on a working day. What is the remedy for this state of things? A truer appreciation of relative values — a new set of ideals. When shall the remedy be applied? Now. How? By beginning at home.

Gentlemen, I hope you will not worship the Golden Calf, though it be the fashionable religion for six days in the week. It is a fearful delusion — widespread, almost universal on this Continent. But if you hope to enjoy a large and lucrative practice by certification to this form of insanity, you will be disappointed. The delusion will spread, the disease will get worse, and then there will come a change for the better; but when or how, neither you nor I can sufficiently look into the future to say; but I have enough faith in human nature to believe that the change must come.—men cannot forever be so blind.

If you have understood me aright you will see that I believe you stand greatly in need of a post graduate course.

You may have been like the farmer who, having a hundred acres of land, cultivated but twenty. Much of your nature may have come under the plough but has not been subjected to the harrow; and yet I deem you the equal of most university graduates on this Continent. The medical students of McGill can no longer rightly be held to be less cultivated or refined than other undergraduates.

Oh, that some wholly enlightened Carnegie would found an institution somewhere on this earth in which the aim should be the development to the highest of the whole nature of man without the idea of converting everything into gold! In the meantime I can direct you to no single institution in which you can find the ideal of a complete

and harmonious development of the whole man distinctly aimed at and provided for.

You must look to your own development. As soon as you can get ready to do so, leave this country for your country's good—but in the first instance with the object of becoming completely developed men, and in the second, of being practitioners equal to every occasion.

There will be all sorts of pressure brought to bear upon you to induce you to put the latter first, but to do so would be to make a life-mistake.

Learn French, and especially German. Go to Germany, the stronghold of science, the part of the world in which medicine has, on the whole, reached its highest development,—a land of honest industry, a land in which literature, art, philosophy, and science, are everywhere respected. Materialism is not in all quarters regarded as the highest good.

Your ultimate destination may, perhaps, be the Austrian capital. Stop in Paris on your way. The *bridges* over the Seine will set a new ferment of civilization working within you. With reverend steps pass within the Louvre, where you will find that great collection of the works of the men of genius in art of all ages—the whole open to you free. France is the generous custodian of this treasure-house for the good of all nations. If, after seeing that, you do not feel expanded in soul—return, your case is hopeless. But, if you feel the littleness of your poor self and the greatness that is undeveloped in humanity, go on to Berlin, the cleanest and best kept city in the world, as it is also one of the most beautiful. Cast about—on every hand you will see evidence that other things than wealth are respected there. Everywhere rise monuments to the memory of men who have distinguished themselves in the various fields of human activity and culture, including medicine. The German capital is an art as well as a military centre. In the Royal Theatre of that city there are more productions in one season of the plays of our own Shakespeare than in all English-speaking countries put together, and there too one may hear more high-class musical productions than anywhere else in the world.

For every department of medicine there is the amplest provision. You can develop your whole nature from every side in Berlin and specialize as much as you will in your chosen profession. If you systematize your activities and waste no time (and which of us does not waste a great deal?), you will be able to get all you are capable of assimilating in medicine and have some time left to develop your better human nature.

It is possible to be a thoroughly qualified physician without being at the same time an utter barbarian.

Leave your Canadian or American spectacles behind.

If you can spend two years in Europe go also to Great Britain for a portion of the time; then return for your country's good and let your light shine — no colored spectral light, but the combined white light of a nature developed in all its parts. Be the good physician by being the large man as well as the doctor.

Who touches our human nature on so many sides as the physician, who gets so fully into the inmost recesses of our being? The man that thus enters in should be no barbarian — no mere diagnostician, no mere prescriber or wielder of a scalpel, but a man with a head and a heart.

He should aim to have the fitting outer 'man which should go with that refinement which when genuine always springs from depths within.

Should some of your number feel in a few years that you have at once the fitness, and the desire to fill some college position you will find no prejudices against you because of youth and immaturity, especially if you have succeeded in getting into print pretty often. It is said the universities do not now so often ask, "What manner of man is the candidate?" as "Is he young and promising?" If you are that, the front door will be open to receive you, and it may be garlanded too.

The older professor, the man whom you are to succeed, makes his exit by a little back gate large enough to allow him to pass accompanied by his hand-baggage. Nobody will know much about it except the new candidates. If he be old enough he may look forward to sufficient to ward off absolute want in the form of a pension as the universities can now spare their purses and consciences through the Carnegie fund.

But such a reward at 65 years! And how many good men and true will never see even this poor promised land.

The only proposal that seems to bear with it the semblance of justice is that of our distinguished graduate, Dr. Osler, who says let there be liberty to retire at sixty or after twenty years of service and with double salary.

Surely a man after serving a university well for twenty years on so small a salary as professors usually receive deserves better than has yet been provided for him! Should he not, with the above-mentioned adequate income, have an honourable place in the councils of the university?

Now, we have been told that the universities are unable to provide for those who have served them long because they must meet the calls for the extension of their work and keep up with the times. Yes,—just like the merchant who says: “You see my rival across the street is building and extending his business. I must keep up with him, so I cannot really afford to pay more than twenty cents on the dollar.”

Gentlemen, keep young and promising. Should one grey hair appear—let it be the first and the last. Grey hairs honourable!—Once—but that was some time ago. Now they are doubtfully honourable, and not at all profitable!

But after all, these university questions will personally concern but a few of you; for most of you whom I address to-day the life of the general practitioner of medicine is the one that you will lead. I have tried to remember *that* in what I have said; but I can imagine some of you this evening sitting quietly after all the excitement of this day is over and saying to ourselves—“I wonder, if that professor valedictorian knew how little there is in my pocketbook, would he have taken so high a flight?

Gentlemen, for some years most of the universities have offered their professors ample facilities for understanding and appreciating such financial anæmia as may mark the condition of some present.

But if you be poor in purse all the more need that you be rich in heart and mind.

After all, there is only one kind of real poverty—poverty of soul. This, at least, need not be yours even temporarily.

Allow me to warn you against two evils that seem to me ever to threaten the medical profession—the one, *superficiality* a tendency to be content with mere sense phenomena; the other, what I would name *Corporealism*—the tendency to keep purely to the body and not penetrate to the spirit of man. Against both of these as a prophylactic I would recommend reading and thinking in psychology and philosophy.

But, Gentlemen, I suspect that when writing this address I imagined that you were once more before me a most attentive and sympathetic body of listeners in my class room, and I fear I have thus been led astray and have continued as if fifty-five minutes were, as usual, at my disposal; but I must not forget that portion of the audience further back, not so used to this—not to mention that portion behind, long given to much speaking rather than to listening.

If I would present one idea above others for you to take away with

you, it would be the nobility of your calling and the peculiarly satisfactory nature of the happiness the doctor can give and may himself feel. The opportunities for preventing disease are great.

You may save a city from pestilence as heroes in the past have done from the sword.

You may, and I hope you will, speak out boldly on the causes of degeneration in the human race through unbridled license.

Think, gentlemen, that it will fall to your lot to bring happiness to some of all classes in society — to all ages and conditions of men. You may ease the path of the aged as they descend into the valley; you may restore the father to his place as the head of the family — the mother to hers — perhaps, the most blessed one that this earth knows.

You may put the roses back again into the cheeks of the maiden; you may snatch the infant from the jaws of death and give it back to its mother, and bring to her a joy such as she only can know.

Yes, Gentlemen, yours is a great, a noble profession. Try to be worthy of it.

Farewell.

FILTRATION OF WATER

BY

T. A. STARKEY, M.B.; D. P. H. (Lond.
Montreal.

Filtration of water has a twofold object:

- (1) Elimination of micro-organisms.
- (2) Straining off sedimentary matters, and getting rid of colouring material in solution.

Methods adopted to accomplish these ends depend largely upon the state, or condition, of the water before filtration, *i.e.*, one of three classes of water may have to be considered:

- (1) A turbid, and perhaps, coloured water, free from dangerous organisms.
- (2) A clear water, possibly polluted and containing dangerous organisms.
- (3) A turbid water, also polluted, containing harmful bacteria.

The composition, or condition, of the water to be filtered is a most, important consideration, and must be taken into account when choosing a plant which is to effect the filtration. Also, it is essential to set before the mind quite clearly, what object or objects must be attained in the filtration, (1) whether the micro-organisms are to be eliminated;

(2) or simply to strain off the sedimentary matters; (3) or a combination of both.

In treating of filtration on a large scale, *e.g.*, that suitable to municipalities, etc., and leaving out of account the filtration schemes applicable to domestic or household use, there are two kinds from which to make a choice: (1) slow sand bed filters; (2) mechanical filters.

The system of "Filtering Galleries" has been left out of consideration, because it has been proved by years of experience, especially in France, where these particular filters were invented and mostly used, that this system is not at all satisfactory. They give out in a very few years, and they cannot be renovated except at an enormous cost. To enumerate the principal points as briefly as possible in connection with the two classes of filters mentioned above.

(1) The slow sand bed filter consists roughly of several layers of differently graded gravel, with a layer of fine sand on top. On the upper surface of the fine sand a "gelatinous" layer forms, and this latter almost entirely constitutes the active filtering agent.

The water is allowed to soak through these layers very slowly, and in its course is thoroughly freed of all suspended matter, including micro-organisms.

The rate of filtration is a minimum of two gallons per square foot per hour, or 2,000,000 gallons per acre per day of 24 hours.

(2) The mechanical filters are classed under two headings: (a) The pressure filters; (b) the gravity filters.

The difference between these two types is one of mechanical arrangement only,—the actual process of filtration in both is the same for all practical purposes.

It consists of a certain thickness of gravel and sand—the smaller grained particles being uppermost.

Resting on the upper surface of the sand is a layer of gelatinous material, created artificially by adding some patent compound, differing slightly in composition in different types—but it may be said that the basis of all is sulphate of alumina. There are one or two processes in which oxide of iron, and sometimes charcoal, are utilized instead of alum; however, the resulting "coagulum" acts in much the same manner as the alum.

In short, it will be seen that the mechanical process may be described as an imitation of the slow sand bed filtration process, having the advantage of rapid cleansing and replacing of the filtering medium.

The rate of flow through these mechanical filters is much more rapid than through the slow sand bed filter—the rate claimed being

a minimum of 100 gallons per square foot per hour, or 50 times faster than the slow sand bed filter, which can only produce two gallons per square foot per hour.

In other words, four mechanical filters, each 12 feet in diameter, produce nearly as much filtered water in 24 hours as a slow sand bed filter one acre in area.

The rates set down above for mechanical filters are minimum rates, and it should be noted that most makers of these filters claim nearly double these figures for maximum rates.

A comparison of the "working results" of the two main classes of filters is the next step.

(1) Slow sand bed filters:—

Once constructed, these filters last for many years in all their parts except the upper layer of sand, which has to be scraped off and washed from time to time, according to the condition of the water. When the latter is muddy, about once in six weeks or two months; when clear, it may only be necessary once every four to six months. A little of the sand is lost in the washing, but the cost of making up the deficit is infinitesimal.

An expert staff of workmen is not an essential: the supervision of the town engineer being the chief requisite. There is no changing of the filtering bed constituents for varying states of the water. The initial cost of construction is only slightly in excess of a mechanical plant of equal capacity.

The cost of maintenance is less, if anything. The performance of the filter is good. It clarifies the water, and removes a considerable amount of colouring matter, though in neither of these respects does it quite come up to the mechanical filters. Its strong point, when coupled with the foregoing, is the reduction of micro-organisms. This reduction is never less than 98 per cent., unless the filter is not working properly—and 98 per cent. is only a fair result: a good sand bed filter ought, under good supervision, to remove 99 to 100 per cent. of the micro-organisms.

An objection has frequently been raised against slow sand bed filters in this country on the score of freeezing. As all these plants are covered in, and below ground, so to speak, they never freeze. It is only the open variety which is subject to this drawback.

(2) The results of the mechanical filters may be described as follows:—

They last on an average 15 to 20 years, and then usually require considerable "repairs." Owing to the process being a mechanical one, constant supervision is very necessary—not so much in the way of

turning taps and valves, as for watching the variations in the state of the water and changing the constituents of the filtering medium accordingly. This is certainly necessary, or otherwise good clarification, let alone reduction of micro-organisms, will not be obtained, commensurate with the production of the required amount of filtered water daily.

Again, very frequent cleansing is essential — when the water is very muddy two cleansings a day are sometimes called for — and under cleaner conditions, the intervals may lengthen out to a few days at the most. However, too much objection must not be put upon this frequent cleaning, because the operation can be carried out so rapidly — but at the same time it necessitates labour which, of course, must be paid for, and it must be skilled labour at that.

The “clarifying” results are excellent, all the sedimentary matters, and nearly all the colouring material in solution, are eliminated.

In this respect they are superior to the slow sand bed filter.

Turning to the biological results, or the power which these filters possess of straining off micro-organisms — here we come to the crucial question in connection with these filters, and one over which so much controversy has been waged during the last year or two.

Adherents of the mechanical filters for this work, sometimes put forward the plea that they have not been sufficiently tested in order to arrive at trustworthy conclusions. However that may be, these filters have certainly been put to official and numerous tests in most countries in Europe and America, to say nothing of non-official tests, which have been instituted on other continents besides Europe and America, *e.g.*, Asia and Africa.

Besides personal experience of these mechanical filters, the reliable official reports from England, France, Germany and the United States are taken as the basis for all the arguments and statements in this article.

In considering bacteriological results of the working of these mechanical filters, great care is needed in the interpretation of the figures reported.

Everything depends upon the rate of flow of the water through the filter — it may be taken as a good working basis “the faster the rate of flow, the less the reduction of micro-organisms in the filtered water.”

The same statement holds good when applied to sand bed filters if they are pushed beyond their limits of safety — viz., three or four gallons per square foot per hour — but, curiously enough, no one ever dreams of taxing sand bed filters to this extent — all engineers seem to be quite satisfied with an output of two to two and one-half gallons

per square foot per hour, and on this working, low bed filters accomplish all that is claimed for them.

On the other hand mechanical filters may be made to give any results that may be wished for, provided no attention be paid to the rate of flow of the filtered water.

I have seen these filters give a bacteriological purification of 99 per cent., but then the rate of flow was ridiculously short of that claimed for the filter.

The sum total of all evidence, in short, goes to show that if these filters are worked up to their advertized capacity, then the bacteriological purification averages about 85 to 87 per cent.

By reducing the rate of flow a purification of 90 per cent. can easily be obtained — but then this means more filters to turn out the daily supply of filtered water. The slower these filters are worked the nearer they approach in action to the slow sand bed filter.

In some types, particularly in the “compound gravitation filters,” advantage is taken of settling tanks, wherein the water, mixed with the coagulant is allowed to settle for a few hours before being run through the filter bed. Under such circumstances a decided reduction of micro-organisms, as well as sedimentary matter, is accomplished, the former giving 15 to 35 per cent. purification. Some opponents of mechanical filters insist that the addition of “coagulant” to the water, for filtration purposes, results in an increase of the hardness of the filtered water. This increase is so small that their objection is theoretical rather than practical.

Having thus set forth as briefly as is consistent with accuracy the working results of these two classes of filters, it remains only to sum up a few of the principal considerations which would recommend one or the other under particular conditions — chiefly being guided by the results which may be called for as appertaining to the filtered water.

In this respect everything hinges on the natural state of the water to be filtered, as to whether it does, or does not, contain micro-organisms which are dangerous to health when consumed.

If no dangerous organisms be present, then filtration can only be required for “clarification” purposes, *i.e.*, to remove sedimentary matters and colouring material in solution.

To effect this a mechanical filter will serve the purpose quite as well, if not a little better, especially in the removal of colouring matter, than the slow sand bed filter.

Where it is a case of removing micro-organisms, dangerous to health, from the water, then there is no question of the superiority of the sand

bed filter over the mechanical filter. This statement is perfectly true whether the unfiltered water be turbid or clear.

It is obviously the bounden duty of urban and rural authorities to supply to the consumer drinking water which shall be freed, as far as lies in human power, from micro-organisms which are, or might be, dangerous to the public health. To say that a reduction of 85 to 90 per cent. of the organisms in a water, which is known to contain a few dangerous bacteria, is quite sufficient for the safety of the public—such a statement is strongly to be deprecated in the interests of the people. It is true that fewer cases of disease are likely to arise by the consumption of water “three-quarters” purified from harmful bacteria, but surely if the few cases can be prevented by 99 to 100 per cent. purification, then the process of slow sand bed filtration which can effect such results ought to have first attention.

On the 14th of June the Northwestern Sanitarium was opened at Port Townsend. The new institution is under the superintendence of W. R. Simons, M.D., formerly of the Mount Tabor sanitarium at Portland. He has under him an efficient staff of skilled men and one lady physician. The new sanitarium is in a beautiful location. It is situated on a bluff overlooking the Sound, and commands an excellent view of the Cascades and Olympians. The building is equipped with all modern improvements.

The new institution will be capable of accommodating one hundred patients.

The annual meeting of the Lambton Medical Association, was held at Watford, on Wednesday, June 13th. There was a large attendance of members, including Drs. Dunfield, Petrolea, Martyn and Spence, Alvinston; Newell, Bentley, Bradley, Wilkinson and Logic, Sarnia; Morgan, Adelaide; Brown, Camlachie; Reid, Wyoming; Bray, Chatham; Gibson, Kelly and Newell, Watford. The president Dr. P. McG. Brown, of Camlachie, presided, with Dr. Reid, of Wyoming, as secretary. The following papers were read and discussed; “Pain,” Dr. Dunfield, Petrolia; Resection of Elbow Joint,” Dr. J. L. Bray, Chatham; “Achyilia Gastrica,” “Third Lobe in Liver,” Dr. James Newell, Watford.

THE

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MEDICO-PSYCHOLOGICAL ASSOCIATION.

The sixty-second annual meeting of the American Medico-Psychological Association was held at the Hotel Vendome, in Boston, from 12th to 14th June, under the presidency of Dr. C. Burr, medical director of Oak Grove Hospital, Flint, Michigan, and was, perhaps, with the exception of the Montreal meeting, held in 1902, the largest and most representative gathering the society has ever had. This is the oldest medical society in America, and one of the most vigorous.

Addresses of welcome were delivered by His Excellency, Curtis Guild, Jr., governor of the Commonwealth of Massachusetts, on behalf of the State, and Dr. G. M. Tuttle, on behalf of the medical profession of the city of Boston, and responded to by the president of the association, after which the regular business of the society was taken up. The programme was a lengthy one, and embraced many papers of great scientific as well as practical interest, chief amongst which may be

mentioned, 'The Colony System in Hospitals for the Insane, by Dr. G. A. Smith, of Central Islip; Family Care of the Insane, by Dr. Owen Copp, of Boston; Care of the Tubercular Insane at the King's Park State Hospital, by Dr. J. I. Mackelway, of King's Park; European Hospitals for the Insane, by Dr. J. C. Clark, of Sykesville, Md. Three papers were set down by Canadian representatives, but only one was read.

Not the least interesting and instructive of the papers presented were the Annual Address, Psychiatry and Experimental Psychology, by Professor Robert F. Woodworth, of Columbus University, and two illustrated lectures, the one, Representation of Various Phases of Epilepsy, and The Paretic Gait, by Doctor Walter G. Chase, of Boston, assisted by Dr. W. P. Spratling, superintendent of the Craig Colony for Epileptics at Sonvea, N.Y.; the other, Idiocy, Hysteria, and Palsy in Classical Pictorial Art, by Dr. L. Pierce Clark, of New York.

One afternoon was devoted to a visit to the new medical school buildings of Harvard University. These are probably the finest and most completely equipped structures of the kind in existence, having been erected through the generosity of J. Pierpont Morgan and J. D. Rockefeller, at a cost of over two million dollars. A second afternoon was spent at the McLean Hospital, Waverley, Mass., perhaps the finest institution for the care of those mentally afflicted on this continent. Here an elaborate and appetizing luncheon was provided for the guests by the directors of the institution, after partaking of which the visitors were shown through the various buildings, the establishment being on the cottage plan and consisting of a number of handsome, widely-separated villas, all beautifully furnished.

The officers elected for the ensuing year were, Dr. Charles G. Hill, of Baltimore, Md., president; Dr. C. P. Bancroft, of Concord, N.H., vice-president; and Dr. Charles W. Pilgrim, of Poughkeepsie, secretary and treasurer. Dr. A. E. Macdonald, of New York, was selected to represent the association at the meeting of the British Medical Association, to be held at Toronto, in August next, and Washington was fixed upon as the next place of meeting.

THE BRITISH MEDICAL MEETING.

Most encouraging reports are to hand from Toronto of the progress of the arrangements for the annual meeting of the British Medical Association in August. It is perhaps well to reiterate that any practitioner who wishes to attend the meeting, if not previously a member of the as-

sociation, can join it by sending his name, preferably on the form provided by any of the local secretaries, to one of the local officials, or to Dr. F. N. G. Starr, Medical laboratories, University of Toronto, Toronto.

In urging all our readers to attend, we feel that we wield a two edged sword. By a large attendance the medical part of the meeting will be made successful, and of the social part nothing need be said; the committee in charge of these arrangements is a guarantee that the work of entertainment will be well done, and we have heard whispers that indicate that there is money in the toe of the stocking. If you go, therefore, you benefit the association, and we think you will benefit yourself. Are you overwrought, it will rest you: are you not sufficiently busy, it will occupy your time with the acquisition of useful information; is your acquaintance in your own profession limited, you will enlarge it: is it large, you will meet the more old friends. There is no one who is not sure to be well repaid, for it is scarcely necessary to speak of the excellent material which is always brought forward at the meetings of the association, nor yet ought it to be necessary to dwell on the privilege that is ours of entertaining so august a body within our boundaries.

We look back with a degree of complacency, pardonable we hope, to the Montreal meeting a few years ago, and we can honestly hope that the Toronto meeting will be a yet greater success, so that we shall be enabled to bring forward yet another evidence of the medical prosperity of Canada, and the progress that she is making.

As a result of the reorganization of the University of Toronto and Toronto General Hospital by the legislature the Ontario Medical College for Women will go out of existence. Ladies who are entering the medical profession will, therefore, in future receive instruction at the Medical School of the provincial university. The medical faculty has as yet taken no action to provide the requisite facilities for inaugurating coeducation in the college, but the question will be discussed in the near future. It will be necessary to provide special dissecting rooms and other aids to the practical study of the profession for the ladies, and these will be suitable for the use of women taking allied courses in the faculty of arts, such as biology and physics.

The controversy in Queens University over the management of the \$50,000 granted by the Ontario Government to the Medical School is at an end. The trustees desired to handle the funds, but the medical men claimed that they should be left in charge of the Medical Faculty.

The present arrangement is that the Trustees will have the custody of the building, and the Faculty will dispose of the funds. This also includes the control of the Department of Biology by the Medical Faculty.

Canadian members of the British Medical Association who intend to avail themselves of the special rate, single fare, \$67.25, excursion to the Pacific Coast at the close of the meeting in August, should communicate their intention at once to the General Secretaries, Medical Laboratories, University of Toronto, in order that information may be given to the railways of the probable number for which provision must be made.

With a view to settling the precise meaning of the Ontario Medical Act, the Attorney-General has stated a case for the determination of the Court of Appeal. The precise point at issue is whether persons who practice medicine without the use of drugs can do so without being properly registered. The interests of Christian Scientists and osteopaths are involved, and before the case is argued these persons will be represented.

The British Columbia Medical Association will hold its seventh annual meeting in New Westminster on August 1st and 2nd, 1906. It is expected that a number of medical men from the neighbouring state of Washington will be present. The subject of patent medicines and life insurance fees will be discussed.

At the close of the Meeting of the American Medical Association in Boston a party of fifty members proceeded upon a trip through the Maritime Provinces, which must have been productive of much pleasure and instruction.

THE BRITISH MEDICAL ASSOCIATION.

TORONTO MEETING, AUGUST 21ST TO 25TH, 1906.

Considerable progress has been made with the arrangements for that notable event, the meeting of the British Medical Association in Toronto in the closing part of August. From the inquiries that are being received from every part of the continent, as well as from the British Isles, it is evident that a very large attendance will be recorded at this meeting. Over 200 members resident in the British Isles have

already asked for accommodation and in many cases they will be accompanied by members of their families. The Association will be convened under thirteen sections, which will meet daily from 9.30 to 1 o'clock. The afternoons and evenings will be devoted to general meetings, public addresses and various entertainments. There will be three public addresses delivered. Sir James Barr will present the address in Medicine, his topic being, "The Circulation viewed from the peripheral standpoint." Dr. W. S. A. Griffith will deliver the address in Obstetrics, Sir Victor Horsley the address in Surgery, and it is just possible that a public address will be delivered by Dr. Marie, of Paris. It is intended that clinics shall be held each morning at 8.30, when interesting cases will be reviewed by some of the prominent physicians and surgeons in attendance. Considerable advance has already been made in arranging for the work of the sections.

Anatomy:—The section of Anatomy will be under the presidency of Dr. Arthur Robinson, of Birmingham. Papers have been promised by the following:—Dr. C. R. Bardeen, University of Wisconsin, Madison, Wis.; Prof. G. C. Huber, University of Michigan, Ann Arbor, Mich.; Prof. J. P. McMurrich, University of Michigan, Ann Arbor, Mich.; Dr. Ross E. Harrison, Johns Hopkins, Baltimore, Md.; Dr. H. Knower, Johns Hopkins, Baltimore, Md.; Dr. G. L. Streeter, Johns Hopkins, Baltimore, Md.

It is also possible that Prof. Mall, of Johns Hopkins, Baltimore; Prof. C. S. Minot, Harvard Medical School, Boston; Dr. E. A. Spitzka, New York, and Dr. R. R. Bensley, of Chicago, may communicate papers.

Laryngology and Otology:—The section of Laryngology and Otology will be under the presidency of Dr. J. Dundas Grant, of London, and will have three or four principal topics for discussion:—1. "Operations for the corrections of deviations of the Nasal Septum." (Discussion to be opened by Dr. St. Clair Thompson, of London). 2. "Laryngeal disturbances produced by voice use." 3. "The indication for ligation of the Jugular Vein in Otitic Pyæmia." 4. "The Diagnosis and Treatment of Ethmoidal disease."

Each discussion will occupy about two and a half hours, the remainder of the day being devoted to papers. It is just possible that Dr. Logan Turner will open the discussion on "Ethmoidal Disease."

Medicine:—Tuesday, August 21st.—"Blood Pressure in its relation to Disease." (a). Physiological Introduction. (Dawson, of Baltimore). (b). Clinical Methods of determining Blood Pressure; their uses and limitations (Geo. Gibson, Edinburgh). (c). Pathology and Therapeutics of Blood Pressure (Sir Wm. Broadbent). Also probably a paper

on the subject by Clifford Allbutt, and one or two others, including one Canadian.

Wednesday, August 22nd.—Discussion in junction with the section of Physiology upon "Over and Under Nutrition, with special reference to Proteid Metabolism"—Introduced by Chriddenden. Other special speakers:—Herter, Starling, Hutchison, Francis Hare, A. Haig, and others.

Thursday, August 23rd.—Papers from William Osler, on Heart Block; J. MacKenzie, on Heart Block; Erlanger, on Heart Block. Other papers, L. F. Barker, A. Stengel, A. McPhedran.

Friday, August 24th.—Papers devoted to Neurological subjects, W. G. Spiller, "Syringomyelia"; J. J. Putman.

The following gentlemen have signified their intention to contribute to the section:—Dr. J. J. Putman, Boston, Mass.; Dr. W. G. Spiller, Philadelphia, Pa.; Dr. Alfred Stengel, Philadelphia, Pa.; Dr. Barber, Baltimore, Md.

—*Obstetrics and Gynaecology*:—The section of Obstetrics and Gynaecology is under the presidency of Dr. A. H. Freeland Barbour, of Edinburgh. The following is the programme suggested:—

Tuesday.—Discussion on "Hyperemesis Gravidarum," opened by Dr. J. C. Cameron, Montreal.

Wednesday.—"The changes in Uterine Fibroids after the Menopause with special reference to operations."

Thursday.—Subject for discussion and opener to be selected by Dr. Barbour.

Papers.—"Uterine Myomata and their degenerative changes," T. S. Cullen. "Sectional Anatomy of Labour" (Lantern demonstration), A. H. F. Barbour. "Condition of Ovaries in normal and abnormal Pregnancy" (Lantern demonstrations), C. Lockyer.

Surgery:—The section of Surgery is under the presidency of Sir Hector Clare Cameron, M.D., Glasgow. The following is the programme suggested:

Tuesday.—"Enucleation of the Prostate Gland." Reader—Dr. Bingham, Toronto.

Wednesday.—"Treatment of Ascites secondary to Chronic Hepatitis."

Thursday.—"Surgical Treatment of Ulcer of the Duodenum." Reader—Dr. W. J. Mayo, Rochester, Minn.

Friday.—"Treatment of Acute Septic Peritonitis."

Pædiatrics:—The section of Pædiatrics is under the presidency of George A. Sutherland, M.D., London. The following is the programme suggested:

Tuesday.—Discussion on “Congenital Pyloric Stenosis.” The medical aspect of the subject will be introduced by Dr. Edmund Cautley (London), and the surgical aspect by Dr. Harold Stiles (Edinburgh).

Wednesday.—Discussion on “Pneumococcal Infection.” The medical aspect will be introduced by Dr. Henry Ashby (Manchester).

Thursday.—A Symposium on “Enterocolitis.” The subject will be taken up under the following headings: (a). Etiology; (b). Pathology; (c). Symptoms; (d). Diagnosis and Prognosis; (e). Medical Treatment; (f). Dietetic Treatment.

Friday.—A Discussion on “Rheumatism.”

Psychology.—The section of Psychology is under the presidency of Wm. Julius Mickle, M.D., London. It has been arranged to have four discussions, one each day of the sectional meetings. The subjects are:—

Tuesday.—“General Paresis.”

Wednesday.—“Classification of Insanity.”

Thursday.—“So-called Mental Degeneracy.”

Friday.—“Dementia Præcox.”

The leaders and those chosen to discuss these subjects will be eminent British, American and Canadian Psychologists and the President, Dr. Mickle, is expected to present the first paper, as he is a recognized authority on general paresis. The second subject chosen will be one of great interest to both countries, as it is a question now under general discussion.

A series of papers will also be presented, and the following Canadians have already signified their intention to take part:—Dr. C. K. Clark, Toronto; Dr. Ryan, Kingston; Dr. Moher, Brockville; Dr. Shirres, Montreal; Dr. Daniel Clark, Toronto.

State Medicine.—The section of State Medicine is under the presidency of Dr. F. Montizambert, of Ottawa. The following programme has been arranged:—

Tuesday.—“The Prevention of Tuberculosis.”

Wednesday.—“Water Supplies.”

Thursday.—“The Hygiene of Homes and Educational and Industrial Institutions.”

Friday.—“International Sanitary Protection.”

Guests.—Prof. Brouardel, member of the Institute and the Academy Medicine of France; Dr. Martin, City Health Officer of Paris, France; Dr. Letulle, Professor of the Medical Faculty of Paris; Dr. Liceaga, Sanitary Adviser of the Government of Mexico, Mexico; Dr. Wyman, Surgeon-General of the United States Public Health and Marine Hospital Service, Washington.

Therapeutics.—The section of Therapeutics is under the presidency of Donald MacAllister, M.D., Cambridge. The following is the programme arranged:—

Tuesday.—“The Study of the Kidney.” (a). Its Physiology and Pharmacology; (b). The Therapeutics of Acute Nephritis; (c). The Treatment of Chronic Nephritis; (d). The Treatment of Uræmia.

Wednesday.—“Serum Therapy.”

Thursday.—“The place of Materia Medica and Therapeutics in the Medical Curriculum.”

Friday.—“The Value of Alcohol in Therapeutics,” Dr. A. D. Blackader, Montreal. “The Teaching of Pharmacology.” “The Teaching of Therapeutics.”

Pathology and Bacteriology.—The section of Pathology and Bacteriology, under the presidency of Prof. J. G. Adami, M.D., F.R.S., Montreal, have made the following preliminary arrangements:—

Tuesday.—“Nuclear Physiology and Pathology.” To be opened by Professor Adami and Dr. Macallum.

Wednesday.—“Etiology and Life-History of Malignant New Growths.”

Thursday.—“The Forms of Arteriosclerosis, their classification and experimental production.”

Friday.—Papers upon “Pathogenic Protozoa,” by various workers. Papers have been promised by Prof. Aschoff, Marburg, Germany; Prof. Novy, Ann Arbor; Dr. Pearce, Bender Laboratory, Albany; Dr. Bushnell; Prof. Grunbaum; Prof. Calder, Leith; Dr. Oskar Klotz, Montreal; Prof. J. J. MacKenzie, Toronto.

The American Association of Pathologists and Bacteriologists have been formally invited to be present, and a number of the members will likely attend.

Dermatology.—This section will meet under the presidency of Dr. Norman Walker, of Edinburgh, who will open the section by an address on “The Teaching of Dermatology.” During one of the days of the meeting there will be a discussion on the subject of “Eczema,” to be opened by Dr. A. J. Hall, of Sheffield, Eng. A paper on “Psoriasis and Light,” has been promised by Dr. J. N. Hyde, of Chicago. Papers will also be given by Dr. Gilchrist, Baltimore; Dr. A. R. Robinson, New York; Dr. Elliott, New York.

Physiology.—The section of Physiology will meet under the presidency of Prof. W. D. Halliburton, M.D., F.R.S., London. The following programme has been arranged:—

Discussions.—1. Discussion in junction with the section of Medicine on “Over Nutrition and Under Nutrition, with special reference to

Proteid Metabolism in Health and Disease." 2. Discussion in junction with the section of Pathology on, "The Rôle of the Nucleus in Nutrition."

Papers.—Dr. S. P. Beebe, New York, on "Serum under the Influence of injected Nucleo-proteid." Prof. T. G. Bordie, F.R.S., London, on "The Functions of the Renal Tubules and Glomeruli." Prof. F. Gotch, F.R.S., Oxford, on "Demonstration of the Spinthariscopes." Prof. W. B. Hall, Chicago, on "New Apparatus." Prof. W. D. Halliburton, F.R.S., London, on "Proteid Nomenclature." Prof. C. F. Hodge, Worcester, Mass., on "Structures and Physiological Functions of *Amœba Proteus*." Prof. C. F. Hodge and M. F. Duncan, Worcester, Mass., on "Differentiation of Contractile Protoplasm." Prof. W. H. Howell, New York, on "Physiology of Heart." Prof. G. C. Huber, Ann Arbor, on "Physiology of Renal Tubules." Dr. G. T. Kemp, Champaign, Ill., on "Blood-platelets." Dr. Louis Lapicque, Paris, on "Electrical Excitation of Nerves and Muscles." Prof. J. S. Macdonald, Sheffield, on "Structure and Functions of Nerve Fibres." Prof. J. J. R. MacLeod, Cleveland, on "Experimental Glycosuria." Dr. Gustav Mann, Oxford, on "A Plea for Microphysiology." Prof. B. Moore, Dr. M. Edie, Dr. Spence, and Dr. H. E. Roaf, Liverpool, on "Experimental Glycosuria." Prof. B. Moore, E. Whitley, and Dr. H. E. Roaf, Liverpool, on "Effect of Ions on Growth and Cell Division." Dr. F. W. Mott, F.R.S., London, on "The Functional Significance of the Convolutional Pattern in the Primates." Dr. Maurice Nicloux, Paris, on "Chloroform Anæsthesia and a Simple Method of Estimating Chloroform." Prof. C. S. Sherrington, F.R.S., and Dr. H. E. Roaf, Liverpool, on "Lock-jaw."

Papers are also promised by the following:—Dr. Harvey Cushing, Baltimore; Dr. P. T. Herring, Edinburgh; Dr. F. G. Hopkins, F.R.S., Cambridge; Prof. Waldemar Koch, Columbia, Mo.; Dr. S. J. Meltzer, New York; Dr. Sutherland Simpson, Edinburgh; Prof. L. B. Mendel, New Haven; Prof. Porter, Boston; Prof. Jacques Loeb, Berkeley, Cal.

Paper by Prof. F. S. Lee, New York, on "The Causes of Fatigue in Certain Pathological States."

Ophthalmology:—The section of Ophthalmology will meet under the presidency of Robert Marcus Gunn, F.R.C.S., London. The following provisional programme has been arranged:

Tuesday.—"Rare Forms of Choroiditis."

Wednesday.—"Sympathetic Ophthalmia."

Thursday.—"Affections of the Lacrimal Passages."

Friday.—"Visual Tests for Marine and Railroad Service."

Most of the buildings of the University will be utilized in connection with the meeting. On the ground floor of the Main Building, in addition to the Post Office and Reception Rooms, there will be rooms for the regular meetings of some six or eight sections. The second floor, in addition to special offices for the Secretariat and the Editor of the *British Medical Journal*, will be devoted almost entirely to the Museum, which will afford some 12,000 square feet for exhibitors. Already a large amount of this space has been disposed of to leading manufacturers of instruments and drugs in Great Britain, the United States and Canada. This alone will be one of the most interesting parts of the Association to Canadian visitors. Accommodation for other sections will be provided in rooms closely adjoining the Main Building. It is expected that the new Convocation Hall will be completed in sufficient time to enable the ceremonies of the official reception, on the evening of the 21st of August, and the public addresses to take place there. Already the committee is actively engaged in providing accommodation for the host of visitors that is expected. Queen's Hall, Wycliffe College, Annesley Hall, the Fraternity houses and other buildings adjacent to the University will probably be utilized, and many of the citizens are already offering their hospitality. The Committee on Entertainment have a most excellent programme prepared. One of the interesting features of which will be an excursion to Niagara Falls, at the invitation of Sir Henry Pellatt. Owing to the exceptionally favourable travelling rates, which have been obtained over the Canadian lines of steam and rail, the attendance will be made very easy and physicians wishing to avail themselves of the privileges of this meeting should communicate with the secretaries at an early date, in order to obtain accommodation.

Reviews and Notices of Books.

THE BIOLOGY OF THE FROG. By SAMUEL J. HOLMES, Ph.D., Assistant Professor of Zoology in the University of Wisconsin. The Macmillan Company, New York.

We are pleased to hear that the Macmillan Co., of New York, along with Macmillan & Co., of London, have established a Canadian agency in Toronto, under the name of "The Macmillan Co. of Canada." We wish their new venture every success.

It has been truly said that the physiologist owes more to the frog than to any other animal, and, after perusing this very interesting book, one is more than ever convinced that such is the case.

In three hundred and seventy well illustrated pages it gives us a most delightful and satisfactory account of these "quaint uncouth dreamers." The frog is here described from every conceivable point of view.

The first chapter is taken up with Mr. Frog's family history, and we are told that he belongs to the class of amphibians, and that the order of anura in which his family holds a prominent place is distinguished from other existing orders by the fact that its members possess legs but not tails. We are then given the peculiarities of tongue, tooth and skeleton by which the various families of frogs and toads are distinguished from one another.

The second chapter discusses the habits and natural history of the frog. We are here told about his voice, of which our Canadian poet Lampman has written so beautifully

"It could not choose, but seem
"That earth, our mother, searching in what way
"Men's hearts might know her spirit's inmost dream,
"Ever at rest between life's change and stir,
"Made you her soul, and bade you pipe for her."

Other sections of this chapter tell us about the breeding instincts, the colour changes in the skin brought about by the extension and retraction of pigment granules in at least three different kinds of pigmented cells, the power of regeneration after injuries which is so great in tadpoles that they can reproduce a tail or even a limb, but which, in the fully developed frog is comparatively limited, and finally the phenomena of hypnotism.

Succeeding chapters deal with the general structure of the frog and with his histology, embryology, and physiology. The account given of the physiology of the digestive organs, metabolism, internal secretion and other functions of the frog might be applied with little change to the higher animals and to man himself.

The closing chapters deal with the instincts and intelligence of the frog. Having certain sins against Mr. Frog on our conscience, we are pleased to note that he does not get angry.

The book is well conceived and well written. We think that it forms a very satisfactory introduction to either biology or physiology. It might be used to advantage by the senior classes in a high school, or by the junior students in a university; we strongly recommend it to all teachers who deal with the subjects embraced in it as we feel sure that they could not read it without much satisfaction and profit.

W. S. M.

A TREATISE ON SURGERY. By GEORGE K. FOWLER, M.D. Two imperial octaves of 725 pages each, with 888 text illustrations and 4 coloured plates, all original. Philadelphia and London, W. B. Saunders Co., 1906. Canadian agents, J. A. Carveth & Co., Limited, Toronto.

Per set, cloth \$15.00; half morocco, \$19.00 net.

The first volume is to hand and embraces what is usually included under the head of the principles of surgery. Special attention is given to the subject of inflammation from the surgeon's point of view, due consideration being accorded the influence of traumatism and bacterial infection as predisposing and exciting causes of this condition. Injuries and diseases are first considered in their effect upon the various separate tissues and then taken up more fully in those chapters dealing with the really clinical portion, regional surgery. Throughout, special attention has been given to diagnosis, and a very excellent section on laboratory aids by Dr. F. E. Sanders included. The text is elaborately illustrated with entirely new and original illustrations, and evidently neither labour nor expense has been spared to bring this feature of the work up to the highest standard of artistic and practical excellence. We regret that the author has not considered it necessary to go more fully into the etiology of the various diseases. This lack of discussion is especially felt in the consideration of malignant disease and congenital malformations. Another objection is to the advice given regarding the simple removing of a V shaped piece of tissue for epithelioma of the lower lip in any condition save the so-called precancerous state, holding, as we do, the belief that in such cases, and here we refer to early cases, glandular involvement though not palpable by external means is almost certain to be revealed by incision. The results obtained in tongue cases by such men as Butlin, Cheatele and others show the author's prognosis to be unfairly gloomy. On the other hand, the article on malignant disease of the breast is thoroughly up-to-date. We look forward with pleasure to the reviewing of the second volume which is soon to appear.

W. T. B.

NEW SERUM—THERAPY. BY D. MONTGOMERIE PATON, L.R.C.S. & P. Edin. Baillière, Tindall and Cox, London, J. A. Carveth & Co., Toronto \$1.50.

During the past eight years the writer has used over 3,333 ounces of anti-diphtheritic serum and 40 gallons of simple plasma of the horse, sheep, and ox. This seems to be considerable quantity. The new serum-therapy appears to consist in the administration of anti-diph-

theritic serum for other conditions than those commonly arising from the operation of the Klebs Löffler bacillus. Near 300 cases are quoted ranging from thrombo-phlebitis to arthritis deformans, all of which were remedied or improved by this new therapy. We hope that it was so, but fear that, when the method is subjected to the spirit of unbelief, the results in other hands will not be so satisfactory.

THE PRACTICAL MEDICINE SERIES: EDITOR GUSTAVUS P. HEAD. 1906.
The Year-book Publishers, 40 Dearborn St., Chicago.

This series of ten volumes, issued at about monthly intervals covers the entire field of medicine and surgery, each volume being complete for the year prior to its publication on the subject of which it treats. The series is published primarily for the general practitioner, at the same time the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire. The price of each volume is two dollars, of the series, ten dollars. Three volumes are before us. Volume I is upon General Medicine, and is edited by Frank Billings and J. T. T. Salisbury. Volume II is upon General Surgery, and is edited by John B. Murphy, Volume III is upon the eye, ear, nose, and throat. The editors are Casey Wood, O. H. Andrews and Gustavus P. Head. This series has been frequently commended for its skilful editing. The present volumes are entirely praiseworthy, and each department is conducted by a Master in the particular field. The book is not an affair of words and will appeal to persons of educated taste.

A LABORATORY GUIDE IN BACTERIOLOGY. BY MR. T. CONNELL, M.D.,
Professor of Pathology, Queen's University, Kingston. Second
Edition, R. Uglow & Co. Kingston.

Nothing of special value has been omitted from this guide for students; and the directions are so ordered and specific, that an intelligent worker can perform the technique of the various operations in bacteriology. The appearance of a second edition is another evidence of the activity of this Medical School.

Introduction to Materia Medica and Pharmacology, including the Elements of Medical Pharmacy, Prescription Writing, Medical Latin, Toxicology and Methods of Local Treatment. BY OLIVER T. OSBORNE, M.D., Professor of Materia Medica, Yale University, 167 pages. Cloth, \$1.00, net. Lea Brothers Co., Publishers, Philadelphia and New York, 1906.

The book commences with a short section on experimental pharmacology intended as an introduction to the laboratory course. The next

section, on the action of the important drugs, is arranged alphabetically to allow the instructor free choice of the drug he will demonstrate and furnishes to the student a convenient reference to the physiological action of each drug. The section on pharmacy explains the important preparations of the United States pharmacopœia. The doses are given in both systems and preparations are grouped according to the size of the dose. The sections on poisoning, weights and measures, latin abbreviations, prescription-writing and dosage are all of importance to the future practitioner of medicine and receive the attention which they deserve. The latter part of the book, which briefly describes the various methods of locally treating different parts of the body, will be found exceptionally valuable.

CLINICAL BACTERIOLOGY AND HAEMATOLOGY. By W. D'ESTE EMERY M.D., B.Sc., Lond., Pathologist to King's College Hospital, R. K. Lewis, 136 Gower St., W. C., 1906. Price 7/6 net.

This the newest volume in "Lewis's practical series," and is the second edition of "a hand-book of bacteriological diagnosis for practitioners" by the same author. It impresses upon the practitioner the value of the information which is obtained by bacteriological examination, and does something to instruct him in the art. The section upon hæmatology is of especial value, and is done with reference to the bed as well as to the laboratory. The book is entirely fresh, and is done by a man of wide education.

MINOR AND OPERATIVE SURGERY, INCLUDING BANDAGING. HENRY R. WHARTON, M.D. Sixth edition, enlarged and thoroughly revised, with 532 illustrations. Lea Brothers & Co., Philadelphia and New York, 1905.

Most of the books of this order confine themselves to bandaging and minor surgical procedures. Owing to the increased attention now paid in medical schools to operations on the cadaver, and the importance of this method of instruction, the author has been led to include in the present edition such procedures as, in his opinion, will prove most useful to the student. On the whole, this selection is a very admirable one, considering the amount of space it is possible to allot to such a subject in this class of book. Special mention must be made of the article on asepsis and antisepsis, comprising, as it does, the most generally accepted and recent methods employed in this important part of surgery.

Medical News.

ROYAL VICTORIA HOSPITAL.

Patients admitted during May, 1906, 284; discharged, 269; died, 17. Medical, 97; surgical, 110; ophthalmological, 24; gynecological, 27; laryngological, 26. Out-Door Department: Medical, 911; surgical, 886; eye and ear, 306; diseases of women, 107; nose and throat, 357. Total, 2,567. Ambulance calls, 96.

The personnel of the staff of the St. John Public Hospital is as follows: Dr. Murray MacLaren, Dr. T. D. Walker, Dr. W. W. White, Dr. A. F. Emery, Dr. W. A. Christie and Dr. Stewart Skinner. Out patients will be looked after by Dr. J. H. Scammell and Dr. A. A. Lewin. Dr. J. R. McIntosh and Dr. G. R. J. Crawford will continue to act as oculists to the institution, and Dr. G. A. B. Addy was reappointed pathologist.

Plans have been prepared for the new Railway, Marine and General Hospital at Fort William. The approximate cost will be \$25,000. The hospital will have kitchens and lavatories on every floor, electric elevators, dumb waiters, steam laundry rooms, a large drying room, equipped with all modern drying appointments, cold storage rooms, and fumigating rooms.

The semi-annual meeting of the Country of Sheffield Medical Association was held at Waterloo, on Thursday, May 17th. Dr. Cowley, president opened the meeting at 3.30 p.m. Dr. Lee W. Martin, read a paper on "Infant Feeding in Difficult Cases." The following officers were elected — President, Dr. Brun; 1st Vice-Pres., S. H. Martin; 2nd Vice-Pres., C. P. Verdon; Secretary, L. A. Lessard.

On the 15th of May the formal opening of the Grace Rescue Hospital in Winnipeg was held.

The death is announced of Dr. William D. Currie of Sydney Mines at Brooklands Hospital, Sydney. He was the son of the Rev. Dr. Currie of Pine Hill College, Halifax, and the cause of death was acute pneumonia.

The death is announced at Brantford of Dr. James W. Digby who died on the 29th of May. He was 64 years of age and a son of the late Dr. Alfred Digby. Educated at Toronto University and at McGill

Medical College he graduated in 1862 and practiced in New York hospitals and as Union surgeon in the American civil war.

Dr. Reuben Curry, of Guelph, died on the 10th of May. He was one of the oldest practitioners of that district.

Dr. James Parker, one of the oldest practitioners of Leeds County, died on the 7th June, at Westport, in the 66th year of his age.

The death is announced of Dr. Joseph Henry Widdifield in Toronto, Sherrieff of York County.

Dr. C. A. Sippi, bursar of the London Insane Asylum since 1888, died May 16th after an illness extending over two or three years.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

GEORGE WOOLSEY, M.D. "Observations on the Diagnosis and Treatment of Typhoid Perforation." *Annals of Surgery*, May, 1906.

Perforation occurs in 2.5 to 3 per cent. of all cases of typhoid. It has been estimated that fully one-third of the mortality of the disease is due to perforation, and that the mortality of these cases subjected to operation is about 95 per cent. In other words, something like 25,000 die annully from perforation, one-quarter of whom might be saved if operated upon promptly. The present paper is based on a study of 18 cases operated upon during the last 10 years in the Presbyterian Hospital.

Pain coming on suddenly and severe in degree was found to be by far the earliest and most constant symptom. Tenderness and rigidity were next in frequency. Regarding these two symptoms we must bear in mind that they are generally dependent upon the peritonitis rather than on the perforation itself. Vomiting was not as frequently present as we might have expected.

The formerly much talked about symptom, the initial fall of temperature was not noted in any cases; on the contrary, rise of temperature, pulse and respiration was the rule. Fall in temperature must now be regarded as among the late symptoms, and is the expression of absorption of infective material, and hence an unfavourable symptom. Distension, tympanites, loss or lessening of liver dulness are late and variable symptoms. The leucocyte count was not of much assistance.

We agree with the writer in laying special importance upon the value of severe pain of sudden onset in the lower half of the abdomen as an early sign of perforation and its increased value as an indication for operation when associated with localized tenderness and rigidity; he emphasizes the importance of exploratory operations in case of doubt, in view of the good results which follow if no perforation is found, and of the earlier period at which operation is done if perforation is present.

It was found that cases of perforation in children give double the per cent. of recovery, and that those occurring during a relapse or convalescence have a more favourable prognosis. The prognosis in cases of perforation in the large intestine is worse, and they have been overlooked altogether.

A general anæsthetic is preferred, the incision made through the right rectus, the abdominal cavity irrigated with a large amount of hot saline through a large Chamberlain tube, and drainage secured either by a large cigarette drain or by a large rubber tube split down the side with a core of gauze, and the patient put in the Fowler position.

HENRY PERCY DEAN, M.S., Lond., F.R.C.S., Eng. "The Importance of Anæsthesia by Lumbar Injection in Operations for Acute Abdominal Diseases. *Brit. Med. Jour.*, May 12, 1906.

This new anæsthetic is the chlorate of one of the amino-alcohols and goes by the name of Stovaine. Its chief physiological differences from cocaine is that it is a vaso-dilator and seems to have a tonic effect upon the heart. A short report of six cases is given, four of which were for acute conditions, three for septic peritonitis due to appendicitis, one for volvulus of the sigmoid. In five cases it produced satisfactory results, but in the volvulus case the man died of respiratory paralysis. In this case there was only a drop of cerebro-spinal fluid seen on puncture, and the explanation given is that there was not enough cerebro-spinal fluid to dilute the drug sufficiently, and hence the more intense effect. In such cases he would dilute the stovaine with physiological solution before injecting it and would inject it very slowly. Surgical shock appears to be very much lessened; this was especially seen in the abdominal cases and in one for sarcoma of the testicle necessitating wide removal of tissues. In three of the cases the development of anæsthesia was accompanied by free passage of flatus and fæces, so that the formerly distended abdomen became flat. The minimal dose that can be given without fear of respiratory paralysis is half the ordinary capsule, that is, 0.5 c. cm. of the solution. If anæsthesia is required low down in the leg, often as little as 0.3 c. cm.

is sufficient. Chaput gives 0.4 as the first dose, and a subsequent dose of 0.3 if required, at the end of ten minutes. The writer begins with 0.6 c. cm. and gives another dose of 0.3 c. cm. at the end of seven minutes if necessary. He lays special stress upon the vital importance of the graduated dosage in all acute abdominal cases. Anæsthesia commences with a numbness of the perineum, feet and legs in about three minutes. By the end of five minutes the patient is usually unable to lift either leg, but can move the toes or ankles. Within seven minutes he is usually anæsthetic up to the groin, and the maximum effect, whatever the amount of the dose, is nearly always produced in ten minutes. The apparatus used by the writer is simple and easy to employ. The after effects are said to be trivial, a slight headache, while the morality is by no means so large as with general anæsthetics.

GEORGE EMERSON BREWER, M.D. "The Surgical Treatment of Chronic Dyspepsia." *New York Med. Jour.*, May 19, 1906.

This article deals with the advance in the surgical treatment of gastric cancer, ulcer, and benign pyloric stenosis. Gastric cancer is said to constitute about 40 per cent. of all carcinomata, and to occur is about one of every fifty individuals. A review of statistics of twenty of the most prominent modern operators, comprising over 600 pylorectomies and partial gastrectomies shows a gradual lowering death rate as the technique of the operations has been improved upon and the cases have been operated upon earlier in the course of the diseases. Thus, Kocher in his last thirty-seven cases had a mortality of seventeen per cent., von Eiselberg twelve per cent. Mayo in his last forty pylorectomies a mortality of only five per cent. These are for the immediate results of the operation and show a very encouraging improvement. The late or end results have also improved, thus Kocher had twelve per cent. alive and well from three to sixteen years, eleven more than two years, and seventeen more than one year, after operation, and Eiselberg has fifteen per cent. alive more than two years, while Mayo has ten per cent. passed the three year limit. In a private communication Hartmann regarded his results in cancer of the stomach as equal to those of the breast. As for ulcer of the stomach and duodenum it is now recognized as being much more frequent than formerly taught, and when we compare the end results of medical treatment, leaves much to be desired. Thus, Greenough and Joslin made a careful analysis of 187 cases treated at the Massachusetts General Hospital and found the immediate results to be cured eighty per cent., relieved eighteen

per cent., unrelieved nine per cent., died eight per cent. Of this number 114 were followed up and the end results were found to be forty per cent. remaining well at an average time of five years, thirty-six per cent. had recurrence of symptoms, twenty per cent. died from ulcer, and four per cent. from unknown causes. These figures show how misleading the ordinary hospital statistics are, that while eighty per cent. are undoubtedly relieved as a result of intelligent treatment, only about forty per cent are cured; that while the death rate during the first attack may be eight per cent. or less, the real mortality is about twenty per cent., so that about sixty per cent. of gastric ulcer cases must look forward to death or chronic invalidism. In contrasting these results with the end results of surgical treatment we must bear in mind that many of the cases operated upon were complicated by pyloric stenosis, and that quite a number were operated upon as a last resort when they were not in good condition for operation. Still Eiselberg reports forty-seven per cent. well on an average of four years, when a posterior gastro-interostomy was performed; Munro reports fifty per cent. treated by the Tinney operation, permanently well, forty per cent. by the long and sixty-six per cent. by the short loop posterior anastomosis; Moynihan gives only two failures in 151 operations, both due to faulty technic and cured by a secondary operation. The writer advises intelligent medical treatment for all primary cases of simple round ulcer; if not relieved after six weeks of this treatment, operation should be advised: while in all cases of indurated chronic ulcer, and in all cases of recurrent symptoms after a primary cure, he would operate.

The part played by ulcer in the production of cancer is brought out by Mumford, who found a history of ulcer in 41 cases out of 50 of malignant disease of the stomach. Again, the percentage of cancer occurring in the pyloric region is approximately that of ulcer, and this holds good also for the greater curvature and cardia.

In benign pyloric stenosis surgery has given most excellent results; thus Eiselberg had ninety per cent. well on an average of two years, and Mumford collected 169 cases of ulcer and its sequelæ, and found the end results in 147 to be seventy-one per cent. permanently relieved, fifteen unrelieved, and deaths 8.9 per cent. Mayo Robson in 500 gastric operations reported his mortality in gastro-enterostomy for non-cancerous conditions to be .37 per cent., with 92 per cent. of cures in cases of hæmorrhage and stenosis from chronic ulcer. Hartmann's mortality was 6 per cent., and his end results 92 per cent. Rotgans had a mortality of 5 per cent. and end results of cures in 85 per cent.

ROBERT W. LOVETT, M.D. "Remarks on the Infections of Joints."
Boston Med. and Surg. Jour., May 24, 1906.

Acute joint infections fall in four groups: Acute osteomyelitis of the articular end of the long bones involving the joint secondarily, acute suppurative synovitis or joint abscess as a result of direct infection as in wounds and also in the course of many of the infectious diseases, acute plastic synovitis leading to joint obliteration as in gonorrhœa, and acute serous synovitis. Tuberculosis and chronic joint disease are not included in this classification. The first three divisions are now well understood, but the latter, generally classed under the name of articular rheumatism, is exciting a great deal of interest at the present time. The case now stands as follows: the synovitis of acute rheumatism does not differ clinically or pathologically from the synovitis of infectious diseases, except that it is more benign. It can be produced by the injection of cultures of pyogenic organisms, and pyogenic organisms have been found in the joint effusions. The specific character of these has not been accepted. No satisfactory explanation of rheumatism has ever been offered, and the history of late years shows a steadily larger number of "rheumatic" cases constantly being classed among the infections. It cannot yet be regarded as a specific infectious disease, but the evidence rather tends to identify it as an "attenuated pyæmia." The evidence is not yet conclusive and the fact that the symptoms are so readily controlled by salicylic acid in many instances is not in accord with what we know of infections. Acute infections of the joints of undoubted bacterial origin occur in all grades of severity in connexion with many infections. As a rule, any one of two or three types of joint inflammation may occur in connection with any one infection. In many cases the source of infection cannot be established, and in such cases the importance of remembering the function of the tonsils and the presence of pyogenic organisms in the mouth as a ready source of infection is of importance.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

BOAS, I. "On the Prophylaxis of Gastric Hæmorrhage." *Deutsche Med. Woch.*, No. 18, 3rd May, 1906.

The author lays much stress upon the recognition of preliminary hæmorrhage probably of small amount, preceding a serious hæmorrhage in

ulcer of the stomach. This, he declares, is the necessary point of departure in attaining a prophylactic treatment. In fifteen months, he saw in private practice, 82 certain and 60 probable cases of ulcer of the stomach. In 58 per cent. of these blood was found in the stools, and in 74 per cent. of a large series of cases reported by Siegel. The question arises, Do these slight hæmorrhages lead in the majority of cases to later manifest hæmorrhages? From experience directed to this question for five years, Boas answers unhesitatingly, Yes! These slight hæmorrhages appear only by the dark colour of one or two stools, and are generally described by the patient as such. Such evidence is not sufficient; but should, Boas says, be the indication for a closer watch for the repetition of it that will likely occur. For the recognition of blood, the guaiac-turpentine, the aloin of the spectroscopic test will answer perfectly well. When blood has been recognized, treatment will be directed first, to stopping the hæmorrhage, and, secondly, where possible, to cure the underlying cause of the hæmorrhage. Rest in bed is at once enjoined, save in cases where gastric or intestinal carcinoma is present; in these, only when the hæmorrhage is severe. Milk diet is strictly enjoined, and in severe cases injections per rectum of 10 to 20 per cent. calcium chloride solution. The author doubts if this effect is by reason of its being a hæmostatic, but considers it useful. In all these cases of hæmorrhage injections are preferable to purgatives to obtain movements of the bowels.

RIVALTA. "On the Differential Diagnosis between Exudates and Transudates by Dilute Acetic Acid. *Policlinico*, 1905, October and November.

The author states that a sure test between exudate and transudate fluid is obtained by dilute acetic acid; it requires but a moment and can be done with a minimum quantity of the fluid to be tested. A white colouring is obtained with exudate, as also with blood serum, while the transudate is unchanged. The reaction depends on the existence of the two globulins and in spite of the existence of the globulin in transudates, the latter gives no reaction. It is true that after repeated paracentesis a slight reaction is obtained, which the author states, reasonably enough, is caused by the presence of exudate with the transudate. Blood does not spoil the accuracy of the test, unless present in considerable quantity. After death, the efficacy of the reaction is said to be lost.

J. McC.

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A CASE OF CARCINOMA OF THE UPPER END OF THE ŒSOPHAGUS, WITH PERFORATION INTO THE TRACHEA.

BY

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AND

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There are several points of interest in the case here described; the growth is situated in the upper part of the œsophagus, which is by no means the common site for carcinoma, as the disease generally affects the tube at about the level of the bifurcation of the trachea; perhaps only a tenth of all cases of the disease are found in the neck region; the perforation of the growth occurs in a large percentage, perhaps a third, of all cases, and the most common place of perforation is into the air passages; herein our case is of the usual type. It occurred in a woman of 32; only a small fraction, less than a tenth, of cases occur before the 40th year, and von Hacker's case in a woman of 31 years, is mentioned among the notable cases showing the neoplasm at an early age. The male is considered more liable than the female sex, in the proportion of three to one.

Annie B., æt. 32, was admitted to the laryngological department of the Royal Victoria Hospital on the 18th of May, 1906, on account of difficulty in breathing and in swallowing. She gave the following history of her illness: ten years ago she had, for a short time, some difficulty in swallowing. A large mouthful or a mouthful of very solid food seemed to choke her and she was compelled to eat and chew her food very fine. She consulted a physician and soon recovered completely. She remained well until October, 1905 (nine years), when she began to have a feeling of a "lump in the throat" and to have again some difficulty in swallowing. This continued, but improved

somewhat, until December, 1905, when she developed a pain and soreness in the throat which has always been in the evening and at night. Her swallowing was not much impaired until about four months before admission, when she began to have some difficulty and, at times, she coughed and expectorated a little blood. The pain and soreness grew worse, and the difficulty in swallowing increased, until about two weeks before admission, when she was no longer able to swallow solid food. A few days later,—about five days before admission,—she began to have difficulty in breathing. This increased steadily until the 24th of May,—six days after admission,—when the difficulty in breathing had become so great that she was referred to me by Dr. Jamieson for immediate tracheotomy. A low tracheotomy was done, which gave immediate and complete relief. On the 28th of May,—four days later,—it was observed that when she attempted to drink milk a small quantity found its way into the larynx and trickled down the trachea. This increased rapidly, so that it was impossible to feed her by the mouth and, in my absence a gastrostomy was done by Dr. Garrow on the 30th of May; and, although the stomach feeding by this method was quite satisfactory, her condition grew worse instead of better. On the 31st of May there was considerable discharge of pus and mucus through the tracheal tube. On the 3rd of June the discharge was very free, and she was troubled a good deal with cough. On the 18th of June she had an attack of severe dyspnoea and cyanosis with much pus from the trachea. The Senior House Surgeon, Dr. McKenty, was hurriedly called to see her. He promptly dragged her head and shoulders over the side of the bed letting her head down nearly to the floor, when about a pint of stinking pus flowed out from the trachea and the mouth. This gave complete relief and while so relieved,—during the next three days,—the same condition recurred and was similarly treated two or three times each day. There was definite dulness on percussion on the back of the chest, on both sides, but not anywhere else, and the dulness did not vary with change of position of the patient. A needle inserted deeply in the 6th space midway between the spine and the scapula border drew off a little pus. The patient's nutrition was very bad, as shown by the lowered vitality of the tissues over the prominences of the back and limbs. She was clearly dying and no attempt was made to evacuate the pus. She died on the 21st June, just four weeks after the tracheotomy operation.

Pathological Report.

Autopsy showed that the patient had died of bilateral aspiration pneumonia, with abscesses and gangrene of the lungs.

Body.—Small, lightly built, emaciated; low tracheotomy wound with little or no reaction around it, edges sodden and limp; gastrostomy wound.

Organs of Neck.—In the œsophagus is an ulcerated, irregular mass of new growth, of which the greater part affects the anterior wall; it begins 1 cm. below upper edge of œsophagus and extends 7 cm. down, at one place being annular and extending around the whole circumference of the tube. A stenosis, almost complete, existed 2.5 cm. from the upper edge of the œsophagus. The growth is nowhere greatly heaped up, but is generally in small, whitish nodules. A vertical slit indicating perforation into the larynx begins 3.5 cm. from the upper border of the tube, is 2.5 cm. long and 3 mm. wide at its widest point, with the parts unstretched. At the lower end of the growth the nodules are no longer in contact, but constitute scattered masses. The rest of the œsophagus shows no change. No secondary growths are anywhere seen. The thyroid gland is healthy. On opening the larynx, the perforation extends downwards from the third ring for 2.75 cm., and has everted, pouting upturned edges of a dirty reddish colour, the rim of the perforation appearing to be made up of cancerous tissue. The opening in the trachea is gaping and has a maximum width of 1.5 cm. Evidently the perforation has been preceded by a considerable degree of cancerous infiltration of the tracheal wall, which is, in addition, dark red with dirty greenish material adhering to it.

Thorax.—Bronchitis exists; the lower lobes of both lungs are dark-greenish, heavy, consolidated, with many irregular necrotic cavities, and some abscesses, the largest, 2 cm. in diameter; these latter contain dark greenish purulent material; and the bronchi exude material similar to that seen adhering to the tracheal wall. The heart showed no change, but some fatty change of the aortic intima is present.

Abdomen.—Cloudy swelling is noted in the liver and kidneys, and there are several fibroids of the uterus.

Microscopically, the growth is seen to be a typical epithelioma.

In discussing the case from its clinical aspect, the cause of the dyspnoea, for the relief of which tracheotomy was done, is not at all clear; the size of the growth is relatively inconsiderable, and there is scarcely enough new growth to explain a tracheal stenosis; it may have been that there was in or near the new growth a breaking down with the formation of an abscess, which subsequently burst with the expulsion of pus, which was referred to as occurring shortly after tracheotomy. It must be stated against this, that post mortem, no abscess cavity

was found in the vicinity; if one had existed, it is barely possible that it could have been obliterated, but, as is observed elsewhere, there is an exuberant appearance of the edges of the perforation on the tracheal side that makes the idea tenable that there was an abscess which bulged into both tubes, and, subsequently breaking out, established the large fistula which finally connected them.

The patient was an unmarried woman, 32 years of age, with good family history and, with the exception of the lesion in the throat, with sound organs. She had never had any illness except typhoid fever twenty years ago. The history would seem to indicate that some traumatic or benign ulcerative lesion about the upper part of the œsophagus at 22 years of age, was followed nine years later by the development of epithelioma, which invaded the larynx from behind, and finally ulcerated into it, allowing particles to pass down the trachea into the lung. The attacks of dyspnœa during the last three days of life were really due to "*pus drowning*" through the bronchial tubes becoming filled with pus from the lung abscesses. If the patient had come under observation a little earlier, removal of the larynx, a portion of the pharynx, and the upper end of the œsophagus would have completely extirpated the disease with a good prospect of complete recovery.

THREE CASES OF TYPHOID FEVER WITH UNUSUAL COMPLICATIONS.

BY

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AND

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Three cases of typhoid fever occurring within a short interval at the Montreal General Hospital illustrating three somewhat unusual complications of that disease, seemed of sufficient interest to bring before this Society. The first case, presenting features of blood destruction, accompanied by convulsive seizures, is related, on the one hand, to the second case, which also showed marked blood destruction with multiple hemorrhages, and on the other hand to the third case, which showed convulsive seizures of another type which were the indirect cause of death.

The first case was that of a young mulatto of 18, who was admitted to Dr. Blackader's service in the Montreal General Hospital on Aug. 21, 1905.

Read before the Montreal Medico-Chirurgical Society.

Nine days before admission, after getting wet, he began to suffer from general malaise with severe pain in the back, some headache, and diarrhœa. His past history was negative. He was an exceptionally well built, muscular young man. His temperature was 104, pulse 80, respirations 24, conjunctivæ distinctly icteroid. The thoracic organs were negative, the abdomen slightly distended, liver $2\frac{1}{2}$ inches in vertical diameter, and spleen readily palpable. There was occasional vomiting of bile-stained fluid.

The urine averaged 12 oz. daily, was of sp. g. 1011, albumen, casts and bile were definitely present.

On the following day the Widal reaction was positive and on the 27th, 6 days after admission, the following note was made: "For the last few days, patient has complained of pain and tenderness in right hypochondrium. There is distinct resistance and a sense of fulness quite absent on the left side."

The bile in the urine is quite marked and also the icteroid tint of conjunctivæ; stools are of normal colour. There is considerable pain over left side with hurried respiration but nothing in thorax to account for it. There have been at intervals distinct attacks of chilliness. Cholecystitis was suspected and Dr. Elder who saw the patient concurred in the opinion. Examination of the urine at this time showed albumen and casts, and *haemoglobin*; spectroscopic examination gave definite spectrum of methæmoglobin. No red cells were found.

On the 29th, two days later, there was occasional vomiting and considerable hiccough, with a feeling of suffocation. Patient had grown very noticeably paler and blood count which showed 75% Hg. on the 24th showed only 50% on 27th with a diminution in red cells from 2,830,000 to 2,706,000 and 16,200 leucocytes.

Differential count showed:

Polymorphs	90
Large mononuclear	4
Small "	3
Transitional	3

with poikilocytosis and polychromatophilia. There were numerous deeply staining very small red cells, and the other red corpuscles showed marked anæmia. Shortly after midnight of the 29th, patient was suddenly seized with a convulsion consisting of a series of tonic spasms affecting the right side of the face and right arm, the right leg jerked rarely. There was conjugate deviation of both eyes to the right, pupils equal but inactive. Face was drawn well to the left side.

Patient was partly conscious and seemed to be suffering from air hunger.

Reflexes on right side were very greatly increased; no Babinski's sign, and no incontinence were present.

Another convulsion followed in a short time yet the pulse remained full and strong. Respiration steadily failed and finally ceased fully $1\frac{1}{2}$ minutes before pulse stopped.

The autopsy performed by Dr. von Eberts, showed all the organs to have a faint yellowish tinge. The heart was pale and flabby, spleen large and very soft; both kidneys were enlarged, capsules peeled readily and the organs showed marked cloudy swelling. The liver was also large and showed cloudy swelling. The gall bladder was normal. For 4 feet above ileo-cæcal valve the Peyer's patches and solitary glands showed hyperplasia but mucosa was intact. Mesenteric glands were also hyperplastic. The bladder contained 2 oz. urine giving spectrum of methæmoglobin. The brain and membranes were normal.

The second case which is somewhat related to the first, was an Italian of 25 years, whose previous history showed nothing of importance. His illness began on Dec. 27th, 1905, with headache, general pains and slight cough, but no epistaxis. He entered the Montreal General Hospital on Jan. 2nd, 1906, with temperature of 102, pulse 118, respiration, 20. He was a strong muscular young man, his tongue and lips were dry and he was very restless but mentally clear. He had considerable diarrhœa. The spleen was very considerably enlarged and a number of rose spots were present on the abdomen. The thoracic organs and central nervous system were negative but the urine showed a very considerable amount of albumen with granular and hyaline casts, a sp. g. of 1020 and small quantity. Ehrlich's reaction was present and a few days after admission the Widal was positive.

He ran the ordinary course of a fairly severe typhoid until Jan. 8th, the 11th day of illness, when he had a chill, his temperature rising to 106. This was followed the next day by another chill. A week later the temperature rose but without a chill and the following day, the 21st of the disease a patch of erysipelas appeared over cheek and nose. On Jan. 22nd there was noted a diffuse purplish subcutaneous area about 3 x 2 in. over the lower end of the sternum and the rose spots present had changed to a purplish colour.

From this date onward these subcutaneous hæmorrhagic areas increased in number and size, appearing all over the body. The eyelid previously swollen as a result of the erysipelas also assumed a slaty purplish hue. Associated with this eruption there appeared epistaxis,

hæmaturia, hæmatemesis and melæna; a blood count taken on Jan. 27th, showed Hg. 75, R. B. C. 3,640,000, W. B. C. 15,900. A blood count taken by Dr. Gillies on Jan. 29, showed no growth and examination for malarial parasites was negative. The patient died on Jan. 30th, the 36th day of his illness.

The autopsy, performed by Dr. Gillies, showed great swelling of both eyelids from which strepto and staphylococci were grown.

Large purpuric patches were seen over thorax, abdomen, face, arms and legs. There were hæmorrhagic ecchymoses of conjunctivæ, sub-mucous hæmorrhages throughout gastro-intestinal tract, and pigmented scars above ileo-cæcal valve. The kidneys showed swelling of cortex and pelves are filled with clotted blood.

A large purpuric patch was seen at the base of the epiglottis.

The next case was that of a young Englishman of 26, a labourer who had been in this country about 6 months.

Three weeks before his admission to the hospital he complained of some cough and pain across the chest and of feeling seedy. He took to bed and there remained until the entrance to hospital and aside from some headache and rather profuse diarrhœa he was fairly comfortable.

On inquiry into his personal history he stated that for the past 3 years he had suffered from fits nearly every night, but denied ever biting his tongue or passing urine.

His habits were good, there being no alcoholic nor venereal history.

He was a tall thin man, poorly nourished and though clear in his mind, was of a rather low order of intelligence. His temperature on admission was 103 2-5, pulse 98 and respiration 22. The pulse was soft and markedly dicrotic, the abdomen slightly distended and showed a profuse rose rash. The spleen was slightly enlarged and the Widal reaction present. The urine averaged 30 oz. and on entrance contained a trace of albumen, no casts and showed sp. g. 1011.

His condition continued good until the 15th of January. The temperature had dropped the day after admission to 99 and gradually rose to 103 on the 14th, dropping again to 99 2-5 on the 15th. Coincident with this fall in temperature he had a slight convulsion, the first since his entrance, and during the next few days they recurred frequently until, on January 19th, patient was going from one into another. On a few occasions these were general with loss of consciousness, but the majority were local, beginning by contraction of left side of face, turning of face and eyes to left side, spasm frequently extending to left arm and sometimes to left leg and opposite side. The right pupil is contracted, but there is no enuresis nor biting of the tongue.

On the 19th, 4 days after the onset of the convulsions temperature and pulse began to rise and rough, later blowing, breathing and moist sounds were heard over the chest.

On the 22nd the temperature rose to 107, and death ensued. After the temperature reached 104 there were no further convulsions. The important features of the autopsy, which was performed by Dr. Gillies, were the presence of typhoid ulcers in various stages of healing, and bilateral broncho-pneumonia, the evident cause of death.

The other organs showed cloudy swelling and the heart was somewhat enlarged, some atheroma of the aorta existed and the kidneys showed a moderate grade of interstitial nephritis. The brain showed on both sides a depression over the lower part of the ascending frontal region.

To summarize:—

Case No. 1 presented hæmoglobinuria with jaundice, both indicating blood destruction; as well as marked parenchymatous change in all the organs, especially in the kidneys, culminating in an uræmic attack. The dyspnœa amounting to air hunger in this case was an interesting feature, and may be explained by the loss of the oxygen carrying power of the red corpuscles.

As to the frequency of hæmoglobinuria in typhoid, Osler in 1500 cases saw it once. One other case we have found reported by Musser and Kelly in 1901. Otherwise the great majority of writers are silent upon the subject.

Whether in this case it was due to the typhoid bacillus alone, in absence of a blood culture we are not prepared to say, but the case lately reported by Dr. Blackader of *b. coli* septicæmia with hæmoglobinæmia, might suggest that there was a mixed infection.

Case II with a general hæmorrhagic tendency shown by widespread purpuric eruption and bleeding from nose, mouth, stomach, kidneys, and bowels is more directly referable to a secondary infection and this is the history of the majority of cases of hæmorrhagic typhoid.

As to the time of onset of the hæmorrhagic manifestations, in most of the cases this has occurred after the second week, although rarely it is hæmorrhagic from the outset.

Gerente in a Paris thesis of 1883, reports 64 cases of erysipelas in 3910 cases of typhoid and states that it usually occurs after the 21st day.

The points of interest in the third case are, first the onset of convulsions in typhoid which in the Johns Hopkins' statistics occurred 8 times in 1500 cases; secondly, the absence of convulsions during the height of the fever and their reappearance as fever came down. This feature

has been mentioned by a number of writers. Also noteworthy is the fact that with a few exceptions the convulsions were sharply localized to the arm and face area.

This was also true of the uræmic attack in the hæmoglobinuria case.

Of the cases of convulsions during typhoid which Osler quotes, two occurred at the onset, 4 from the toxæmia, one from thrombus of the middle cerebral and one from tuberculous meningitis. We have to acknowledge with thanks the kindness of Dr. Blackader in permitting us to report Case No. I from his wards, and thanks are due Dr. Fyshe and Dr. Tees for the clinical histories.

CEREBRAL TUMOUR SIMULATING A VASCULAR LESION.

BY

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The symptoms denoting the presence of a cerebral tumour are usually gradual in onset and progressive in character. Occasional exceptions are, however, observed, and the symptoms if of a sudden origin are usually due to a complicating vascular lesion, either hæmorrhage or thrombosis.

The object of the present communication is to call attention to a class of cases beginning with symptoms of hemiplegia or apoplexy which may completely mask the true nature of the malady. The following case is one in point.

Joseph L, æt. 47, stonecutter, was admitted to the Montreal General Hospital on April 1st, 1905, and died on May 25th. He complained of headache, weakness of the right arm and some difficulty in speaking.

He cannot remember any previous illnesses, and denies having had venereal disease. He has smoked heavily, but was always a moderate drinker. His father died of rheumatism, while his mother and two of his children died of tuberculosis. The present illness came on during sleep. He went to bed feeling well and strong, and on the morning of March 15th he noticed weakness in the right arm and difficulty in speech. After keeping at work for eight days he was obliged to stop owing to inability to hold his tools.

Present condition.—The patient is a strongly built and well developed man. There is weakness of the right face and arm and slight difficulty in finding certain words. The gait is normal and the foot is not dragged.

On the right side the face shows flattening of the labio-nasal fold, the movements of the forehead are defective and the eye is not so

firmly closed as on the other side. He is unable to whistle, but emotional movements, such as laughing, are equal on both sides. The tongue is distinctly protruded to the right. The right arm can be raised only to the level of the shoulder or slightly above it, the grasp is very weak as are also the muscles of the wrist and elbow. Dynamometer right hand 0, left 40. The motor power in both legs is slightly diminished and apparently equally so. There is an entire absence of rigidity of the limbs, no ataxia and the sense of posture is normal. The knee jerks are slightly increased, especially the right, no ankle clonus. The abdominal and epigastric reflexes are absent on the right side, the other superficial reflexes are present.

Speech is somewhat defective. He mentions the names of most objects in French, sometimes in English. He can give his name, but not the number of his house. He understands everything that is said to him, but as he has never learned to read or write it is impossible to investigate his powers along these lines. Apart from emphysema the other organs are normal. The pulse during the first three days varied from 56 to 88, the temperature during the same period 96.8 to 98.6, the urine is normal, and at no time did it contain albumen or sugar.

During the first few days he complained of headache, but this was never severe and he always slept well. The face and arm became weaker and his mental condition showed progressive deterioration; he became very dull and lethargic with incontinence of urine and fæces. Motor aphasia became marked and ultimately he was unable to name any object, although he recognized their use. The leg began to show some weakness whilst ankle clonus and increased knee jerk developed, especially on the right side. The leg eventually became extremely rigid. There were two attacks of irregular convulsive movements of the limbs. The pulse was frequently slow, 52 to 60, later it became increased in frequency. Vomiting was present on two occasions only. He ultimately passed into a comatose state with contracted pupils and rapid respiration, dying ten weeks after the first onset of symptoms. The eyes were examined by Dr. Kerry a month before death; the pupils were equal and active and the eye grounds normal.

Iodide of potash was administered in increasing doses, but had to be discontinued on account of a severe stomatitis which it set up.

Dr. B. D. Gillies, who performed the post-mortem examination, has kindly furnished the following report:

Anatomical diagnosis.—Tumor cerebri, patchy sclerosis aorta and coronary arteries: patent foramen ovale: chronic adhesive pleuritis

(right): broncho-pneumonia and abscess of the lung (left): chronic congestion of the liver: duodenal ulcer.

The brain, after removal of the dura, showed flattening of the convolutions in the third frontal, ascending frontal and parietal regions of the left hemisphere, also a slight reddening of the cortex over the third left frontal region. The pia was smooth and glistening throughout. The first temporal convolution is compressed by the bulging of the upper boundary of the Sylvian fissure.

On section after hardening the brain, a tumour was found extending from near the anterior end of the Sylvian fissure in the third frontal convolution backwards almost to the posterior end of the sulcus. The growth measured two inches from without in, and two and a quarter inches from before back. The edge is irregular and no definite capsule was evident except at the upper and anterior end of the tumour in the ascending frontal convolution, where it was immediately subcortical. Behind this level it merged with the grey matter of the cortex and came very close to the surface, especially in the tissues forming the roof of the Sylvian fissure. The inner border of the growth was ill-defined and extended in for two inches from its outer edge.

Several small dark brown hæmorrhagic areas were scattered through the growth. Microscopically, the growth proved to be a spindle-celled sarcoma.

The diagnosis on admission seemed to lie between hæmorrhage and syphilitic softening, the former being regarded as more probable. With the progress of the case neither of these hypotheses seemed quite satisfactory, but it seemed possible that a progressive specific arteritis with extending thrombosis of the vessels might account for the increasing paralysis and deepening torpor and lethargy.

The usual symptoms of cerebral tumour were absent. Headache, although present for a short time, was never severe or persistent; vomiting only occurred on two occasions, and optic neuritis was absent a month before death. Had more weight been laid on the gradually increasing stupor, on the slow development of paralysis and spasm in the leg and on the two convulsions, a more correct opinion might have been reached: the sudden onset, however, was so strongly in favour of a vascular origin that these symptoms did not secure sufficient consideration.

The localisation of the lesion offered less difficulty than its pathological character. A cortical condition was improbable owing to the absence of early Jacksonian attacks, whilst the fact that the leg escaped paralysis in the earlier stages suggested the subcortical region rather than the internal capsule as the most probable site.

In the light of the post-mortem examination the tumour must have been latent for some time, and the occurrence of hæmorrhage into its substance apparently caused sufficient enlargement to involve the motor fibres passing from the centres of the arm and face, thus accounting satisfactorily for the sudden paralytic symptoms.

The clinical course of most instances of cerebral tumour is marked by a slow and progressive advance of the symptoms. The occurrence of hæmorrhage or softening in the neighbourhood, or even of hæmorrhage in the substance of the growth itself, as in this case, is, however, marked by a sudden onset or exacerbation of a symptoms. Hemiplegia, accompanied in severe cases by loss of consciousness, ensues in precisely the same fashion as in ordinary form of rupture or occlusion of the cerebral vessels. Where evidence already exists of the presence of a neoplasm, the recognition of such cases is not usually a matter of difficulty. A history of preceding severe headache or the existence of optic neuritis would give the clue to the underlying condition.

The difficulty of recognizing the presence of tumour in cases of sudden onset is greatly enhanced when there is no previous history suggesting coarse disease, or when, from any reason such as unconsciousness, no history is forthcoming. Here the symptoms closely simulate those of ordinary hæmorrhage or softening.

Hæmorrhage, as might be expected, occurs in the more vascular forms of tumour, particularly in glioma, and may take place in the tumour itself or on the vascular layer at its periphery. In the latter case the extravasation is occasionally large, and may even rupture into and flood the ventricles. Cerebral softening is frequently found at the surface of new growths as the result of pressure, or it may follow occlusion of vessels from pressure or by invasion of the lumen of the vessel by a neoplasm. In the case of syphilomata concurrent disease of the vessels is often found.

The onset of such cases is commonly marked by paralytic symptoms, but in the case of extensive hæmorrhage or even of softening, the clinical picture may be that of apoplexy. Hughlings Jackson records an instance of a patient brought to hospital comatose in whom the diagnosis of apoplexy was made. The autopsy revealed a hæmorrhage into the lateral ventricles originating from an adjacent tumour. A parallel instance is related by Martin in which the terminal symptoms were due to softening. The patient, after being confined in an asylum for some years, became rapidly unconscious, there was a doubtful paralysis of the right side and the right pupil was dilated. The autopsy revealed a tumour the size of a hen's egg in the right hemisphere,

forming the roof and part of the outer wall of the ventricle and pressing on the optic thalamus. There was softening of the basal ganglia and of part of the right hemisphere. West and Banks have recorded somewhat similar instances.

Bouveret, in recording two cases of sudden onset of paralysis in cerebral tumour, associated in one case with hæmorrhage, in the other with softening, remarks on the recurrent character of the attack, within a period of a few days or weeks. Although such a course is not unknown in ordinary hemiplegia, it is certainly unusual to find the attack following another at such short intervals, and this writer is apparently inclined to regard such occurrences as suggestive of latent tumour.

That paralysis of sudden onset in cases of cerebral tumour is not invariably due to vascular lesion is shown by two cases recorded by Gowers. Post-mortem examination failed to reveal any indication of hæmorrhage or softening in either of these instances. Gowers suggests that inhibition of the motor area is responsible for the symptoms, and he regards them as analogous to the sudden occurrence of a convulsion during the course of the disease.

The occurrence of hæmorrhage or softening associated with cerebral tumour must be regarded as a grave symptom. Should the patient survive the immediate effects of the attack, recurrence as shown by Bouveret's cases is apt to take place. The fatal issue is frequently precipitated by either of these accidents, and of the cases above referred to all proved fatal within a period of ten weeks.

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NOTES ON MALARIA AND ITS TRANSMISSION.

BY

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In offering the following notes for publication, the writer wishes to state at the outset that he does not purpose offering a comprehensive article on malaria, either historically, clinically or otherwise. The

purpose of the article is simply to draw attention to certain features of the disease observed during a four-year residence in the malarial districts of Mexico, which, in the writer's judgment, do not receive the attention in the standard works on medicine to which their relative importance entitles them.

Briefly stated, the clinical picture of acute malaria, as usually described, is that of an intermittent fever of sudden onset, preceded by headache, weakness, pains in the back and limbs, anorexia and general malaise; and accompanied by a chill, vomiting, sweating, diarrhoea, pains in the liver and spleen, with some enlargement of these organs. Although these undoubtedly constitute the main symptoms of a clearly defined case of malarial fever, it soon becomes evident to a physician practising in a malarial district that there is a very large number of cases that do not conform to this picture of the disease, so large indeed that the exceptions in some districts seem to predominate; and it is more particularly to these atypical cases that attention is directed in this paper.

Most writers in defining the disease regard fever as an essential; but, if we regard the presence of the *hamameba* as diagnostic of the disease, a "dormant" or "latent" malaria exists with no clearly defined subjective symptoms whatever, and "malarial fever" is but one of the later symptoms of malaria, and may or may not be present, as in the following cases.

Case I.—Office boy, age 13, was used as a subject for a blood count performed with no particular object other than practice. The corpuscles under $\frac{1}{6}$ objective were noticed to be irregular in outline and granular. On examination with the oil-immersion a very large number of corpuscles were observed infected with plasmodium of malaria. On questioning and examining the patient and taking pulse and temperature nothing abnormal was found except a slightly enlarged spleen.

Case II.—Labouring man, age 22, strong and active. Blood was extracted from his ear for the purpose of demonstrating the appearance of normal blood, and the difference between it and another sample infected with the malarial parasite. Several infected corpuscles were observed in the field. The patient gave no subjective or objective symptoms or physical signs other than the blood condition.

Six other apparently healthy cases were selected indiscriminately, as they came for vaccination, and were similarly examined, and the parasite found in small numbers in all.

Not only do we find cases responding to a microscopical diagnosis of malaria, but with none of the typical subjective symptoms of the

disease, but we find many others with but one or two obscure symptoms, as in the following case.

Case III.—Young man, age 27. Had suffered from neuralgia of small occipital nerve of right side for four years, coming on at intervals of from seven to fifteen days, and accompanied by anorexia, flushed face and slightly congested eyes. Pain was aggravated in the recumbent position and was diagnosed at first as “congestive” headache. The neuralgia did not respond permanently to local or constitutional treatment. The blood was tested first by the hæmatocrit and found slightly anæmic for an altitude of over 5,000 feet, viz., 4,500,000. The patient was put on iron. In about one month a microscopical blood count was made to determine the result of treatment, and the blood accidentally found to be infected with the malarial parasite. Permanent relief followed promptly the administration of quinine.

MALARIA IN CHILDREN.

If in adults we meet with many atypical cases of malaria, in children we do so, I believe, with even greater frequency, as in them the three stages of the paroxysm are rarely so well defined as in the adult.

The cold stage in children is quite rare, especially in the hot climates; and when present usually partakes more of the appearance of a mild degree of collapse than of that of a distinct chill. Well marked trembling is exceeding rare in young children. The sweating stage is less pronounced in the higher than in the lower altitudes. Bronchitis and diarrhoea, however, are quite constant in patients under five years of age, and, with the fever, I consider, constitute the three most valuable symptoms for the diagnosis of malaria in children. The importance of bronchitis in leading the physician to suspect malaria is, I believe, greatly underestimated, especially in children in the higher altitudes, where they are subject to more extreme moisture and temperature. I am aware that the existence of malarial bronchitis, like that of malarial neuralgia, etc., is questioned by some authors, but I have thoroughly convinced myself that they occur—the former with some degree of frequency, at least under such climatic conditions as existed where I was located. Probably the bronchial mucous membrane is not the seat of any special invasion by the malarial organism, but, as it is undoubtedly a channel for the elimination of many drugs and other foreign constituents of the blood, I can see no logical reason why the toxins of the sporulating parasites, which cause such intense chills and fevers, can not be eliminated in part through the same channel; and, in conjunction with the sudden changes in temperature,

cause an inflammation of the bronchial mucous membrane. As demonstrating the existence of bronchitis in malarial fever of children, let me cite the following case. (Also see *Case V.*)

Case IV.—Baby, age 3 months, was brought to my consulting room late at night, suffering from urgent dyspnoea, severe cough, hoarseness, nasal catarrh and diarrhoea. The child was very pale, almost collapsed, with cool skin, pinched face, dim eyes, rapid pulse and rectal temperature of 104.8° F. The coughing was croupous and almost continuous while in the office. On examination, the pharynx and tonsils were badly inflamed, but no membrane was visible. An examination of the chest made me suspect the possible onset of capillary bronchitis following upon the throat condition. So completely did the bronchial symptoms dominate the scene, that I began preparations for taking cultures from the throat, and for the administration of diphtheritic antitoxine. Remembering, however, many cases of milder malarial bronchitis encountered previously, I decided to examine the blood first; and, somewhat to my surprise, found it intensely infected with hæmamoeba in the sporulating stage. The child was put on given doses of quinine three times a day, and made a rapid and complete recovery, the fever disappearing in two days, and the cough in six.

Upon the recognition of such cases as the above depends, not only the successful treatment of the bronchitis, but, what is more important, of the disease of which it is but a symptom.

TRANSMISSION OF MALARIA.

A physician practising in a low tropical climate, where malaria is very prevalent, soon appreciates the fact, now definitely proven, that the mosquito *Anopheles* is the all-important agent in the spread of this disease. That it is the only one I have been led to doubt by the following cases which came under my observation. I may state here that, after spending some time in the hot malarial districts on the west coast of Mexico, I changed my place of residence to the town of Topia, situated back further in the mountains at an elevation of 5,400 feet above sea level, but only a short distance from the malarial district and having considerable commercial intercourse with it. Malaria was quite prevalent in Topia, especially in the spring and fall, among people who, at some date had resided on the coast. Mosquitoes, however, were quite rare; so rare, indeed, that I do not recall having been bitten by one during my residence in that place. Shortly after my arrival I attended a woman at her confinement, and, about three months later, was called in to treat the child, which had the following history.

Case V.—Child, aged about three months. Was attacked by low fever, ranging from 100° F. in morning to 102° in afternoon. Onset was slow and accompanied by bronchitis. After making the usual examination, I diagnosed it as a case of catarrhal bronchitis. Patient was put on cough-fever mixture. No improvement followed. Having to leave town for about ten days, the child was left in charge of another physician. On my return it had fallen off considerably in weight, and the cough and fever were much the same. The medicine was changed, but with no benefit. A consultation was held, and all the probable causes of the fever and bronchial conditions discussed and searched for. Malaria was suggested, but was not considered possible in view of the high altitude, absence of mosquitoes, and our absolute knowledge of the child never having been out of the town at an elevation of 5,400 feet. After four or five days more the fever, which had never been normal during any of my calls, gradually assumed a slightly tertian type, and the clinical diagnosis of malaria was forced upon me. Prompt recovery followed small doses of quinine.

I record this case, as it was the first to arouse my suspicion that, in a few cases at least, other agents than the mosquito are instrumental in the spread of the disease. In watching for other such cases as confirmatory evidence, I have collected to date five more cases in infants, whose date of birth I knew, and who, to my positive knowledge, had never been out of the town where they were born. These five cases were all diagnosed microscopically.

In searching for the agent at work in the transmission of malaria from infected persons to these uninfected children, I noticed that the outbreak of malaria in the spring followed closely the date at which the fleas — which here constitute a veritable pest — became troublesome. My suspicions were directed to them, and with the hope of determining whether they were a factor, I undertook the following small experiment.

Several fleas (*Culex serraciceus*) were procured from a dog, and, after being kept in a glass beaker for some time, one was placed under a watch glass on the forearm of a malarial patient. The flea was afterwards killed, the blood extracted from the stomach and examined with the oil-immersion. Several corpuscles were seen containing the same type of parasite as was found in the patient's blood, and in the same stage of development. The experiment was repeated several times, and free spores also were found. This experiment is not positive proof that the flea is capable of inoculating an uninfected person with the disease, but it is, at least, suggestive; and, taken in conjunction with the clinical evidence, seems to point to the flea as one of the probable

agents in the transmission of malaria. The actual inoculation of the disease by the flea to an uninfected person, to eliminate all doubt, would require the infected insect to be taken to an uninfected district, and there to inoculate an uninfected person. If kept without food, the parasite rarely survives twelve hours; and I have not succeeded as yet in devising any artificial medium on which its life could be maintained the necessary period of time.

DIAGNOSIS OF MALARIA.

Upon young physicians intending to practice in malarial districts, I would impress the oft repeated advice to use the microscope in all obscure cases where even a suspicion of malaria can exist; at the same time watching for other diseases as complications, which, fortunately, are rare. The microscope is probably of more practical service in the diagnosis of malaria than of any other single disease, rendering it simple and prompt, and clearing up many obscure cases which otherwise would almost certainly be overlooked. Its frequent neglect is difficult to understand.

A convenient method is to carry continually a small pocket box containing cover glasses, and a small spear shaped pocket lance, the most convenient blade probably being $\frac{1}{2}$ inch long and provided with a shoulder to prevent it entering too far on being quickly inserted.

The most convenient points from which to take the blood are probably the lobe of the ear or the forearm, as they are quite insensitive. The finger tips should be avoided, as they are excessively sensitive, and the pain may persist for a day or two. What I believe to be a very convenient and practical procedure is to take quickly but a very small quantity of blood, and that the very first that flows, as I believe it contains a much larger percentage of affected corpuscles than that which comes after. I never wish the blood to be sufficient to cover half the area of the cover-glass. If the examination is made during a chill, it should be made quickly, as the blood soon coagulates. In searching the field, the few number of rouleaux and the shattered corpuscles frequently seen serve to make the diagnosis probable even before encountering the spores or the corpuscles containing the parasite.

TREATMENT.

Nothing of interest is to be added here. Removal to high altitude, large doses of quinine, with milk diet while the fever persists, and the avoidance of constipation throughout, constitute all that is necessary in most acute cases. In children, or in adults with vomiting, the hypodermic method is very satisfactory. In the chronic form, change

of climate, a liberal diet, fresh air and such tonics and hæmatinics as quinine, strychnine, arsenic and iron probably give the best results. Residence for a year or so in the north is frequently followed by good results. It should always be borne in mind, however, that a few days treatment, although it may check the fever, never eliminates the disease. Blood examinations reveal the presence of the parasite even after the administration of quinine for weeks.

RESUMÉ.

In conclusion, I would like to emphasize the following:—

1. The large proportion of atypical and obscure cases of malaria met with in malarial districts.
2. That any one or all the subjective symptoms may be absent, and the patient be a malarial subject.
3. That in malarial districts the large majority of the population have the parasite in the blood.
4. That in children, fever, diarrhœa and *cough* are the three chief symptoms of malaria, the chill and sweating stage being rarely present.
5. That the mosquito *Anopheles* is probably not the sole agent in the transmission of the disease.
6. The constant use of the microscope for diagnostic purposes.
7. Prolonged treatment.

A CASE OF EPIDEMIC MENINGITIS OF TWENTY HOURS DURATION.

BY

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Epidemic cerebrospinal meningitis is at times a disease of terribly fulminant character, but I have not happened to find in the literature a more rapidly fatal case than is here recorded.

In the autumn of 1905, there came to the Royal Victoria Hospital in one week, three cases from the same house on St. Dominique Street: the three cases were not related, as far as I know, but lived under the same roof; one was a child of tender years, who died after a few days illness, the second was a man of 30, who recovered from the intense symptoms of the acute attack, but died of chronic meningitis, with extreme emaciation, eight weeks later. The subject of this case report was the third. He was a foreigner and had excellent health

up to the onset of the illness; the evening preceding his death he attended a dance or some such festivity; went to his work at eight o'clock in the morning, felt his head ache at eight-thirty, had a chill at nine, by five o'clock was wildly delirious, was comatose at one-thirty the following morning, and dead at four-thirty, twenty hours after the onset of the first symptom. Before describing this case more fully, it may be said that the cases were reported to the Health authorities, and this focus of infection was responsible for no further outbreak.

L. V., aged 23, a labourer, on the morning on which he was taken ill, ate a good breakfast and began his work at 8 o'clock; at 8.30 o'clock headache began, which rapidly became more severe; at 9 o'clock he became feverish and had a severe chill: by his friend's statements, which were indefinite, his fever increased during the day, and by evening he was delirious. On admission, about midnight, he was wildly delirious, required restraint, and was evidently hyperæsthetic, as he resented being touched; pupils equal, contracted; face cyanotic, and a petechial rash was present on the forehead, and becoming evident on the chest and legs. At 3 a.m. delirium gave way to coma; temperature 104° , pulse 106, weak, embryocardiac. Eyes react to light, knee-jerk just obtained, no Kernig sign; after the onset of coma, the purpura could be observed to increase on the body under observation, and new spots would appear on an outlined area, while one watched it; cyanosis rapidly deepened. Lumbar puncture showed no excess of pressure, and yielded turbid fluid, which was incredibly rich in intra- and extra-cellular diplococci, negative to Gram (meningococci), the field resembling a smear made from a culture tube in the numbers of the organism. A diagnosis of acute epidemic cerebro-spinal meningitis was made, and the patient died twenty hours after the first onset of symptoms.

The autopsy was performed seven hours after death. Body rigid, muscular, livid, except where pressure was exerted, where it was pallid; conjunctivæ hæmorrhagic, pupils half-way between the dilated and the contracted state, equal: the face and front of body and limbs showed a purpuric eruption, the largest petechiæ being 3 mm. diameter; a dozen such could be counted in a square inch, with others less bright as a background: comparatively few existed on the back. Inguinal and axillary glands were palpable.

The dura was greatly injected, and the pia over both hemispheres similarly so; smears showed very abundant intracellular and free meningococci. There was similar injection over the base, but no naked eye appearances of suppuration anywhere: the brain, itself, showed

marked congestion, but nothing else. The ethmoidal sinuses and upper nasal passages were dry, and showed no signs of inflammation.

The pharynx, larynx and trachea were intensely congested, as were the bronchi. There was œdema of the lungs, no consolidation, and obsolete tuberculous nodules were present.

The pericardium contained 20 cc. of turbid blood stained fluid, and many petechial hæmorrhages were seen in the epicardial surface. The heart muscle showed cloudy swelling, and the blood was very fluid, clots being absent. Slight fatty change of the aortic intima was observed. The recti muscles and the pectorals were cloudy; the coils of intestine showed numerous petechiæ.

The stomach mucosa was dusky, œdematous, and showed many submucosal hæmorrhages. The liver lobules were indistinguishable, the organ cloudy. The spleen was small, weighed 165 grms., firm on section, dark red in colour. The kidneys were dark red, swollen, almost bloody. The entire bladder wall was dusky, with four small hæmorrhages. Small hæmorrhages were found in the substance of the testes.

This microscopic examination of the tissues yielded nothing of note in addition to the above. Smears made at the autopsy, in addition to those mentioned previously, showed meningococci in the pericardium, none in the urine, although bacilli were here present. Cultures from the ethmoidal cells gave meningococci, streptococci and a bacillus, not identified; from the meninges, meningococci; from the heart-blood, meningococci; from the pericardium, liver, spleen and gall bladder, no growth; from the bladder, mixed bacilli.

In this autopsy, one is struck by the fact that we are dealing, not so much with a meningitis as with a septicæmia; the existence of the meningococcus in the heart-blood and pericardium, indicates a wide distribution of the organism, and, were it not for the microscopical discovery of the specific germ, the naked eye appearances are those of a septicæmia, and the description might answer for an acute septic injection of any kind—save, perhaps, with the exception of the spleen. In this, however, is nothing remarkable; it is scarcely worthy of note, save that the septicæmia is often lost from sight in the local manifestations of the presence of the meningococcus.

The most remarkable feature of the case, apart from its startling rapidity of progress, seemed to me the appearance of the smears from the fluid obtained by lumbar puncture; so rich was this in meningococci, that the microscope field suggested not so much a cerebro-spinal fluid, as a drop of very richly infected gonorrhœal pus; it is not any exaggeration to say that a 1-12 oil-immersion field would show many dozens, perhaps, even hundreds, of the organisms.

OSTEOMALACIA ASSOCIATED WITH LIPÆMIA.

BY

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The following two cases though incomplete in their study are of such interest as to merit a report of them. It is regrettable that as the condition of lipæmia was not recognized during life, we are unable to link the *intra vitam* findings with those obtained at post mortem; and, moreover, that the qualitative blood examinations are wanting in each case.

At the present time the question of fat absorption and fat destruction is occupying a prominent place among the subjects of research, and recent findings go more and more to prove that the transformation and transportation of fat in the various parts of the body follows common chemical laws; that is, that the process of absorption from the intestinal canal into the blood stream differs but little from the fat absorption at the natural fat depots of the body: each being the result of enzyme action. And so too it has been shown that fat emboli, so called, which are so common in the lungs after injury, are of little consequence there as they become absorbed by the lipases of the blood thus again freeing the blood vessels. However, it is still a debatable question whether the kidneys are able to excrete fat, and the manner in which fat is secreted by the mammary glands is also undetermined.

Cases of lipæmia have not been uncommon in association with diabetes, and diseases of the pancreas; in neither of our cases, however, was there true diabetes present, though the first one showed the presence of small quantities of sugar in the urine just before death.

History of Case I.—J, female, aged 24. From the service of Drs. Garrow and Archibald. The patient had been in hospital previously for osteomalacia and genu varum, and during her stay developed erysipelas. She was discharged on April 8th, 1905. After returning home she remained fairly well up to May 12th, when she developed a severe pain in the right side; this pain continued to increase in intensity. Previous to onset of pain she had some diarrhœa, which was not very severe. On May 15th she had some difficulty of micturition. She vomited only once. On admission patient was suffering very great pain, referred to the right side. Examination of the abdomen showed no tenderness or rigidity on left side, but these signs were present on the right. There was some fulness of the abdomen which extended from the umbilicus towards the antero-superior spine, and in this region a large and somewhat round mass could be

palpated. An operation was undertaken and the abdomen opened over the appendix. A large globular cyst-like mass was exposed, and free pus escaped from it. Numerous adhesions were encountered in the pelvis, and the mass was made out to be a pus cavity in the broad ligament. The uterus was noted to be of infantile character. Total ablation of the broad ligament on the right side was performed. Patient stood the operation fairly well, but was very weak. For four days the patient's condition remained about the same. On May 20th (five days after operation) vomiting became fecal in character. There was heavy albumen in the urine and hyaline casts. For the next three days the fecal vomiting continued, and the abdominal wound showed absolutely no attempt at repair. There was no evidence of peritonitis. May 26th. Patient had been gradually sinking, and appeared irrational at times. Towards the evening she became comatose, but regained consciousness shortly afterwards. While conscious she was quite noisy. At midnight patient was seized with a severe convulsion resembling that of a uræmic condition. Between the convulsive attacks she regained consciousness. During the night she had some twelve convulsions, and died at 10.10 the following morning.

Autopsy performed by Drs. Adami and McCrae.

At autopsy was found the body of a rather dwarfed girl with a small barrel-shaped chest. The left leg had a marked bending of the femur with the convexity outwards. There was a posterior bending of both tibiæ, and left lateral scoliosis in the lumbar region. It was noted on removing the skull, as also in cutting the other bones that the bone cut easily, and could be pared with a knife. The pelvis was a marked example of osteomalacia; the arms of the pubes joined at a very acute angle, so that 5 cm. from the symphysis they were only 2.75 cm. apart; the transverse measurement of the brim was 8.5 cm. The long bones were found to be composed of only a shell of bone on the outside with a honeycombed structure immediately within this, and containing a soft pulpy marrow. The ribs have a very marked amount of spongy tissue surrounded by a thin shell of bone while they and the spinal vertebræ can be cut with moderate ease with a knife. Of the general organs in the body the kidney showed a condition of chronic parenchymatous nephritis while a local septic peritonitis was also present.

Anatomical diagnosis.—Right salpingo-oophorectomy; acute localised septic peritonitis; chronic parenchymatous nephritis; osteomalacia; uræmic ulceration of œsophagus and jejunum; acute catarrhal gastroenteritis; pulmonary apoplexy; lipæmia, uremia (?).

In the microscopical examination the following conditions were noted:

Lung.—The vessels of the lung were found to be loaded with fat staining material. However, it was not universally seen that the alveoli are bounded by capillaries loaded with fat. The walls of the blood vessels, too, were noted to contain fat in minute granules, which lie both in the endothelial and connective tissue cells of the vessel walls.

Liver (Sudan III and Hæmatoxylin).—Showed an extremely interesting condition in that the lobules are picked out by the Sudan in the peripheries, the central vein and its neighbourhood being entirely free from fat. This fat was present within the liver cells themselves, there being little or none found free in the capillaries. The hepatic artery showed little fat within it. Many of the bile ducts were seen with their cells containing fat granules both at their periphery and towards the protoplasm adjoining the lumina. The larger portal vessels too contain some fat. The liver cells are seen to contain fat in minute granules which do not seem to coalesce readily.

Heart muscle.—There is fatty degeneration of the individual muscle fibres with a considerable quantity of fat in the small capillaries and present in and about the cells of the larger blood vessels.

Kidney.—Fat is found in the capillaries of the Malpighian tufts and besides this in the convoluted tubules. Many of the epithelial cells of the convoluted tubules were seen to be desquamated, having their substance densely infiltrated with fat. The straight tubules too showed a fatty change, in that fat droplets were seen in the base of the cells.

Spleen.—The vessels showed a considerable quantity of fat within them, and the cells also contained the fine granules of fat.

Case II.—F. B., æt. 24. From the service of Dr. W. F. Hamilton. Patient was in usual health on May 14, 1906, and went to bed feeling quite well. At midnight he was found by the people in the house unconscious and rigid. He had evidently fallen out of bed. He soon regained consciousness and complained of soreness in the muscles of his arms. Between midnight and 10 a.m. the following morning he had three convulsive seizures, regaining consciousness in the intervals. Since 11 a.m. he has remained unconscious. Patient was born in England and had been in Canada about a year. He has always been a delicate child and suffered from frequent attacks of nausea and vomiting. He has had indefinite pains in the legs which would become stiff, causing a spastic gait. He had difficulty in raising himself after stooping. This stiffness and pain of the legs extended into the arms. He is an excessive smoker but does not use alcohol. On admission to hospital his breathing was quiet and regular. Thorax showed nothing unusual. Hæmoglobin amounted to 55 per

cent.; leucocytes, 20,000. There is a marked genu valgum recurvatum of the right knee. Patient became comatose and could not be roused. On 16th May, 1906, he had ten convulsive seizures up to 4.30 a.m., when they began to increase in depth; his right arm became rigid and wrists flexed. There was no frothing of the mouth, nor biting of the tongue. There had been Cheyne-Stokes breathing since 7 a.m. Patient died at 11 a.m. Some albumen and casts were found in the urine, but no sugar or blood.

An autopsy was performed by Drs. McCrae and Klotz.

At post-mortem was found the body of a young man of medium stature in whom the shoulders were apparently large, elevated looking, not unlike an upward dislocation of the humeri. The legs were bowed backwards and showed the condition of genu valgum recurvatum. The skull cap was rather thin and cut readily, and when removed the calvarium seemed to be mostly made up of diplœe. The right humerus had the greater tuberosity fractured, and a shell of bone about the size of a 50 cent piece lay displaced on it. The surgical neck of the bone, too, was broken with some displacement upward of the upper fragment. The medulla of the shaft of the humerus was very pulpy, and was converted almost entirely into red marrow, there being only faint streakings of yellow marrow remaining in it. The left humeri was completely broken through at the surgical neck where the compact bone existed only as a thin shell. With a little force the shaft could be fractured in new places. At the sites of the original fracture of the humeri there was found blood infiltration of the muscle and surrounding loose tissue, denoting the recent occurrence of the lesions. The vertebræ were soft and could everywhere be cut with a knife. The bent tibiæ showed nothing further beyond the bending of the bone and the characters of the thinning of the compact tissue and transformation of the marrow as noted in the humeri.

Frozen sections of the different organs stained with hæmatoxylin and Sudan presented very interesting features.

In the lung a great amount of fat was found in the small capillaries bounding the alveoli and appearing as if these vessels were plugged. The fat existed in one continuous mass, passing from the larger to the smaller vessels. A condition of isolated plugging of vessels by means of fat at their bifurcation was not seen. In some instances the fat could still be recognized in very minute and sand-like droplets. The kidney had the capillaries of the cortex and median zone filled with fat, the Malpighian tufts having their capillaries distinctly defined by the Sudan stain within them. The larger vessels of the kidney also

showed fat in their lumina. The parenchymal cells of the cortex were in a state of fatty degeneration, particularly to be noted in the convoluted and collecting tubules.

Anatomical diagnosis.—Osteomalacia, chronic mixed nephritis, lipæmia, cloudy swelling of liver and kidneys, fracture of both humeri with hæmorrhage into muscles, genu valgum recurvatum, uremia (?).

The chief interest in the above two cases is the association of osteomalacia with lipæmia. The condition of osteomalacia extended through the entire osseous system—as far as could be examined. The vertebræ and skull in both cases were markedly affected, while in Case II the long bones were also severely involved in the disease, so that spontaneous fracture occurred in the humeri.

In each of the above cases the occurrence of the excess fat in the blood, is with difficulty coupled as a complication or process of the osteomalacia, as in each case there was present another condition, which, although small in itself, must not be overlooked. We had in the first case the presence of sugar in the urine, arising shortly before death. Small as was the amount of sugar which was present, the fact cannot be entirely outlawed, on account of the frequent occurrence of excess fat in the blood in diabetes.

In Case II we had the presence of spontaneous fracture of both humeri which might be held to account for the fat found in the capillaries of all the organs. However, the distribution of the fat in the organs does not support the contention that a large quantity of fat was suddenly thrown into the circulation on the occurrence of spontaneous fracture. Had this been the case we should have expected to find the greater quantity of fat lodged in the lungs, instead of being fairly uniformly present in all the vessels.

It has been shown experimentally that large quantities of fat thrown into the venous system lead to a blocking of the radicles of the pulmonary artery, with a consequent respiratory death. At the same time it is the frequent finding at the post mortem table to note the presence of fat in the vessels of the lung after all fractures and severe injuries of bone. Usually, however, when death follows such an injury the lungs are the only seat of the fat deposit. In Case II where the patient died within a short time after the fracture of the humeri, we would not expect to find the large quantity and the wide distribution of the fat.

Similarly in Case I. I know of no reported case in which, with the small quantity of sugar present in the urine, and occurring only a few hours before death, there has been an excess of fat found

in the blood. Nor are we justified in speaking of the fat deposits seen in the capillaries after death, as emboli, for in no organ is there the end result of an embolus,—an infarct. The wide distribution of the fat in the blood gives us clearly the picture of lipæmia.

Quite recently Turney and Dudgeon reported a case of diabetes in a female aged 35, in whom the disease had been existing eighteen months. Nothing unusual was noted in the course of the diabetes until the eyes were examined. The condition of the fundi which were alike was striking. The discs were pale, the vessels were filled with a milky fluid instead of blood. The patient did not complain of her sight. On examination of the blood it was found that there was a remarkable quantity of fat present in it. The interesting feature of this case is that although much of the blood was replaced by free fat, the condition did not produce any untoward symptoms. This agrees with the observations of Fischer, who reported a most extreme case of lipæmia in a diabetic patient. During life the blood appeared as a milky fluid, and Fischer found that the fat was present as very minute particles, smaller than red blood cells, so that no interference was encountered in the capillary circulation. Fischer also noted that it was only after the death of the patient that the fat particles ran together to form larger globules. It was these larger globules that gave the appearance of fat emboli in the vessels.

The condition of true lipæmia can be reproduced in animals without producing in them any such symptoms as are encountered in pulmonary embolism. The best emulsion of fat which we can use in the experiment is milk, which can be inoculated into the veins of rabbits until the circulating blood holds an appreciable quantity of fat, without producing any serious effects in the animal. As was said above, the inoculation of the pure fat, containing sufficient olein to make it liquid at body temperature, into the veins, produces quite different symptoms from those produced by milk. In the former where the fat already exists in larger and smaller globules, the vessels of the lungs become rapidly plugged, and, moreover, the cohesion of the fat to the walls of the blood vessels helps in sealing off the small arteries. In these experiments it is found that little fat reaches the general circulation, almost the entire quantity being held in the lung capillaries. Should death not occur, after the inoculation of fat, the emboli are slowly dissolved by the lipase of the blood, besides being broken up into smaller globules by the endothelial and connective tissue cells growing into them. Wuttig found that these cells extended long processes into the fat masses and tended to reduce them into smaller particles.

The observation of Fischer, that the fat emulsion as is present in lipæmia, only tends to coalesce into larger fat masses after death, is an interesting one. It would seem that the fat diaplets are protected by a coating which keeps them from running together, and most likely the coating consists of a layer of fatty acids or soaps or their compounds with the proteid.

Under the general heading of osteomalacia a number of different diseases have been listed. Among these, Schönberger, Grawitz, Marchand and others have described a form in which the bone changes appeared secondary to a diseased condition (tumour) of the medulla of the long bones. In Schönberger's case, the tumour masses had a predilection for the bony structures and were distributed sporadically in the different bones. The histological examination of cases showed the tumour masses to consist of giant-celled sarcoma.

Such cases of tumour invasion in the bones, with secondary rarefaction of the osseous tissue are to be differentiated from the true osteomalacia which is primary in the bones. In the former cases the osteomalacia is limited to the region of the tumour growth, in the latter the entire skeleton is involved.

The true osteomalacia occurs most frequently in young women during or after pregnancy, and it is apt to begin in the bones of the pelvis, where it remains the most marked. Successive pregnancies in these cases aggravate the condition, so that the whole skeleton is converted into a non-calcified flexible,—in other cases fragile, tissue. The non-puerperal form is noted most frequently in the vertebræ and thorax, spreading then to the extremities and finally to the cranial bones.

The incidence of the disease is practically limited to certain geographical areas: in Germany, in particular, it is confined to the basin of the Rhine (Ziegler).

Eisenhart found that the alkalinity of the blood was reduced in osteomalacia, while v. Recklinghausen placed more stress on some vascular derangement of the bones. It has been held, too, by some that the loss of the lime salts in osteomalacia is consequent upon the formation of excessive lactic and carbonic acids in the bone tissue. There appears to be something in common between osteomalacia and rickets, as in each the non-calcification of osteoid tissue is a prominent feature.

In the cases here reported, we have an example of each of the two forms of osteomalacia. In the first case the framework of the bones was abundant, but was lacking in calcium salts; in the second case there was no such deficiency of lime, but the trabecular framework was scanty. In each case, however, red marrow could be squeezed from

the different long bones. and they had the common feature of being both associated with lipæmia.

Another interesting feature which, however, in both of our cases remains unexplained, is the occurrence of convulsions just before death. Whether these were the result of uræmic intoxication or some blood dyscrasias connected with the osteomalacia, cannot be said.

CEREBRAL COMPLICATIONS SECONDARY TO NASAL DISEASE.

BY

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During the past decade considerable attention has been devoted to the study of meningitis and cerebral disease as secondary to inflammation of the nose and its accessory cavities. Dreyfuss, Zuckerkandl and others have done much original and scientific work in this connection and a consideration of the subject may, I venture to hope, prove interesting.

Undoubtedly meningeal complications are much more frequent following aural disease as compared with intracranial complications secondary to nasal suppuration, but many cases of meningeal involvement as a result of nasal disease are overlooked, and if an earlier diagnosis of the nasal trouble had been made possibly aural suppuration would be much less frequent, as the majority of otitides are secondary to nasal or nasopharyngeal inflammations. When one considers the complex and intricate formation of the nose, with its accessory cavities exposed to atmospheric changes and particularly in our climate where the four seasons are sometimes represented in twenty-four hours, one can readily understand why the resisting power of the nasal tissues should be lowered and the tendency to bacterial invasion, and as a result frequent subsequent purulent inflammation follows. The pathological changes, which one observes in the meninges or brain substance as a result of extension of infection from one or more of the nasal cavities, will depend upon the virulence of the micro-organism, and the situation of the source of the infection, namely, whether it originated from the frontal, ethmoidal, maxillary or sphenoidal cavities. Hajek has pointed out that experience demonstrates that a slight inflammation of one or more of the cavities often shows a particular tendency to involve the

meninges or cerebrum; yet, on the other hand, closed empyema may exist for years without affecting the meninges, and, therefore, besides the cause of the infection there are certain predisposing factors which must be considered.

(1.) Congenital defective formation in the bony walls of the nasal cavities.

(2.) Partial or complete closure of the normal apertures of the cavities.

(3.) Pronounced virulence of the infectious bacteria.

There can be no doubt that many inflammatory products of the nose are carried to the meninges by the nasal veins which anastomose with those of the dura mater. Zuckerkandl demonstrated by injecting a fluid into the superior longitudinal sinus immediately above the frontal cavities that the veins and mucous membrane of the frontal cavities and those leading into the foramen cæcum, as well as those of the superior half of the nose, were filled with fluid injected from above. The anterior and posterior ethmoidal veins empty into the superior longitudinal sinus usually directly, at other times they enter the meninges through the superior ophthalmic veins, and less frequently through the inferior ophthalmic. There is, also, a vein which passes through the lamina cribrosa and enters into the superior longitudinal sinus, or into the veins of the olfactory tract. Schafer and Thane state that "coloured fluids can be made to pass from the subarachnoid space through the arachnoid villi into the prolongations of the subdural space which surround those villi within the venous sinuses and lacunæ and thence into the sinuses themselves." Therefore, if the cavernous and longitudinal sinuses, and particularly the former, are not filled with the normal quantity of blood there will be a lessened amount of cerebro-spinal fluid in the subdural space and other lymphatic spaces of the cerebrum. This view which I advanced five years ago I will endeavour later to show is practical, and will help to explain some intracranial symptoms referable to nasal obstruction.

THE NASAL ETIOLOGY OF CEREBRO-SPINAL MENINGITIS.

Weigert was the first to demonstrate by a bony section of the nose from a case of cerebro-spinal meningitis that the superior half of the nose and its cavities presented intense inflammatory changes. Weichselbaum confirmed, or supplemented, Weigert's investigations by making sections of the nose in ten cases which had died from cerebro-spinal meningitis; out of this number the cavities in five were diseased. Cultures of pus from the meninges and nasal cavities revealed the presence

of the *Diplococcus pneumoniae* and other pus producing bacilli, such as the *Staphylococcus aureus* and *Streptococcus pyogenes*, as well as the *Diplococcus intracellularis*. The *Diplococcus pneumoniae* has been frequently found in pure cultures in such cases.

In a recent paper published by Weichselbaum he states that his earlier observations, in connection with this disease, have been confirmed by subsequent original investigations, namely, that the most frequent micro-organism found in cases of cerebro-spinal meningitis is the *Diplococcus intracellularis*. The microbe is not carried, as a rule, by dust, contrary to the view expressed by Westernhofer, for Jüger and Germanos have demonstrated that the *Diplococcus* is destroyed by drying. This would accord with clinical experience, as the disease is more prevalent in winter and early spring months. It is, also, well-known that unhygienic surroundings, and a debilitated system, favours its development. As showing the etiological relationship of the *Diplococcus intracellularis* (with this disease) of the twenty cases reported by Anderson, which were examined by lumbar puncture, "seventeen showed the presence of an intracellular *Diplococcus* decolorizing by Grams'; seventeen attempts were made to grow the organism; thirteen were successful; cultures of blood were made in five, in one of which the organism was recovered; this last point is of special interest, as there are very few instances in the literature reporting the recovery of the organism from the blood." The point of entry is usually the nose, and the infection gains admittance to the meninges by different channels. It is interesting to note the *Diplococcus intracellularis* can be found in the nares of healthy persons who have attended cases of cerebro-spinal meningitis, and that the infection can be carried to others by such individuals.

Of the five cases published by F. X. Wall and E. N. Eisendrath, in which autopsies were made, the absence of any focus of infection in any part of the body, other than the nose and its accessory cavities, precluded the possibility of a different origin. In F. R. England's case, complicating measles, although no autopsy was made, cultures from the nose, before death, revealed the presence of the meningococcus of Weichselbaum. Adami, in 1897, drew the attention of the profession in Montreal to the fact that he considered the nose a common source of infection in such cases.

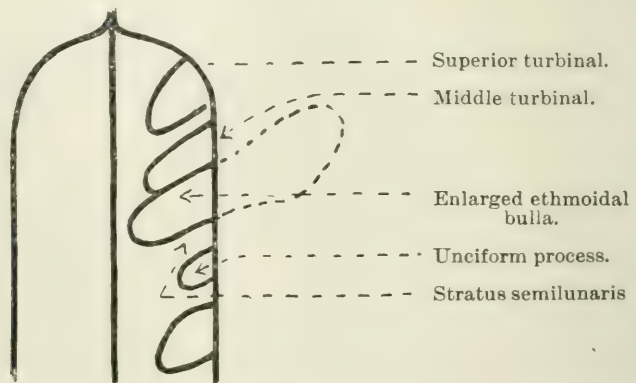
In Dreyfuss' tables, which show the relationship existing between empyema of the different cavities and inflammation of the meninges and brain substance, there are five cases of death caused by extension of the infection from the antrum of Highmore; eighteen cases of death

following empyema of the frontal cavities; ten cases following infection from the ethmoidal labyrinth, and eleven cases following empyema of the sphenoidal cavities. From a study of Dreyfuss' tables one would conclude that the most frequent intracranial lesion, following empyema of the antrum of Highmore and sphenoidal cavities, is thrombosis of the cavernous sinus, while that which follows empyema of the frontal cavity is intracerebral abscess, and the specific brain lesion, following empyema of the ethmoidal cells, is meningitis.

The following case reported by me in the New York Medical Journal came under my observation in December, 1899.

A girl, aged 9, had suffered from general malaise and headaches for a period of two weeks; at the expiration of that time the pain had become more marked in the outer half of the right frontal and parietal regions. It was aggravated by noise and photophobia was present. The patient complained of a feeling of nausea, but did not vomit. Temperature $102\frac{1}{2}^{\circ}$ F., pulse, 130; family history good; lungs normal. There was a muco-purulent discharge from both nostrils, more copious from the right. The family physician suspected some meningeal involvement and requested me to make an examination of the nose and ears.

The ears were normal. Examination of the nose revealed a muco-purulent secretion in both nostrils, particularly in the right middle turbinated space. There was atrophy of both inferior turbinals. The anterior end of the right middle turbinal was enlarged; the ethmoidal bulla on this side was distended and pressed upon the inferior and inner surface of the middle turbinal as shown roughly in the accompanying diagram.



I advised both nostrils to be sprayed with a two per cent. solution of cocaine in listerine every hour, to be followed a few minutes later by

equal parts of glycothymoline and water, in order, if possible, to flush out the cavities and prevent any possibility of untoward affects from the cocaine. A large amount of pus came away in the return fluid. Twenty-four hours after this treatment was instituted the headache and other unfavourable symptoms had disappeared, and the temperature and pulse were almost normal. From the history and symptoms of this case I regard it as one of attenuated meningitis, caused by extension of infection from the right ethmoidal labyrinth.

Report of Huguenin's, Ogston's and Warner's cases of meningitis, following infection from one or more of the cavities, are instructive, and a synopsis of the case of the last named writer may prove interesting.

A man, aged thirty-two, a gardener by occupation, presented himself for treatment, complaining of intense pain in the frontal region, which, however, soon became general. The patient was unable to sleep, and vomited twice during the first twenty-four hours. On the second day coma and convulsions supervened, and death occurred the beginning of the third day. The post mortem revealed acute meningitis involving both halves of the basal meninges; the lateral ventricles were full of pus; the dura mater, at the base, presented a healthy appearance, with the exception of that portion which covers the lamina cribrosa, which was slightly thickened and easily separated from its attachment. The lamina cribrosa was covered with exudate. The frontal cavities were completely filled with pus, as well as the mucous membrane of the olfactory portion of the nose and that of the ethmoidal labyrinth. No bony caries was found.

It is well known to nasal surgeons that children suffering from nasal and naso-pharyngeal growths are unable to compete, either mentally or physically, with children who enjoy good health. The same, also, applies to adults, and the following case, which was referred to me by Dr. W. H. Drummond, illustrates the effects of pressure of the nasal veins upon those of the meninges.

Case I. A man, aged fifty-eight, a dye worker by occupation, complained of almost constant dizziness and inability to concentrate his mind upon his work. The organs, so far as could be ascertained, were normal. Examination of the nose revealed a slight deviation of the septum to the right, and marked hypertrophy of both middle turbinals; bands of tissue connected the left middle turbinal with the septum; both inferior turbinals were slightly hypertrophied, and there was a chronic nasopharyngitis.

After removal of the hypertrophies from the middle turbinal the patient experienced complete relief from the attacks of dizziness.

Case II. Referred to me by Dr. J. M. Elder. A man, aged fifty-six. Face presented a sallow, unhealthy appearance; complained of suffering from occasional headaches for the past ten years, and was subject to a cold in the head, particularly in the spring and autumn months. For the past year the headaches were becoming more frequent, and accompanied by attacks of dizziness.

On the morning of November 22nd, 1898, he had such a pronounced attack of dizziness while driving that "he almost fell out of the carriage." He states that he had had a discharge from the right nostril for the past ten years.

Examination of the viscera revealed no abnormalities.

Nasal examination showed deviation of the septum to the left, with a bony cartilaginous ridge extending from the anterior naris to the choana on the left side. There was marked hypertrophy of the right middle turbinal, and considerable pus in the right middle meatus.

Exploratory puncture of the right maxillary antrum revealed the presence of a large quantity of pus.

I drained the antrum through the alveolar process of the second bicuspoid, and, as pus was still present in the nose after cleansing the antrum, I removed the anterior end of the middle turbinal and curetted the ethmoidal bulla and the anterior group of cells; pus flowed freely. There was considerable hæmorrhage following the removal and curettement, which I controlled with several large plugs of sterilized absorbent cotton, saturated in a glycerine alcoholic solution of suprarenal extract.

Since the operation, the patient presents a healthy, ruddy appearance. He has had no recurrence of the attacks of headache or dizziness, and states that he has not enjoyed such good health for the past ten years.

In many cases of nasal obstruction, involving the middle and superior half of the nose, I have found "dizziness" not an infrequent symptom, which disappears after the removal of growths and hypertrophies in this region.

In such cases the effects of pressure upon the nasal veins caused a damming back of the blood from the veins which communicate with those of the meninges, and the disturbance in the maintenance of the equilibrium of the basal meningeal veins, which secondarily affects the amount of cerebro-spinal fluid in the subdural space and other lymphatic spaces of the cerebrum, thus manifest itself by attacks of dizziness.

This theory is purely mechanical, but appeals to me as rational.

CONCLUSIONS.

The advisability of examining the nose and naso-pharynx in all cases where meningeal inflammation is suspected.

In all cases of headache, particularly where the cause is obscure.

In all cases of dizziness, whether or not associated with aural disease, examination of the nares should never be neglected.

The necessity of exact clinical and anatomico-pathological observations in order to demonstrate the relationship existing between diseases of the brain and its membranes, as secondary to inflammation of the nose, naso-pharynx and pharynx.

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The thirty-ninth annual meeting of the Canadian Medical Association will be held in Toronto, on the afternoon of the 20th of August and the forenoon of the 21st. The meetings which will be of an executive character will be held in the New Science Building on College street, at the head of McCaul street. The first session will convene at 2 o'clock p.m. in the north lecture room. The chief item of business will be the reception of the report of the Special Committee on Re-Organization and for this alone there should be a large and representative attendance.

At the annual meeting of the Ontario College of Physicians and Surgeons, Dr. W. H. Moorehouse, of London, was in the chair. There will in future be examinations at London, Ont., as well as Kingston and Toronto. The college property was lately sold for \$100,000, and the finance committee reported a balance of \$62,580 on deposit to the credit of the college.

T H E

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

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No. 8

THE LATE DR. CRAIK.

It is fitting that in these pages we should make reference to the loss sustained by the medical profession in the death of one who has so long been identified with the progress of medicine and medical education. It is not enough to say that his active life has been contemporaneous with the most progressive half century that this country has known, but it may well be said that no one has been more closely identified with the movement than was Dr. Craik. He has given at all times his time and his efforts not only to McGill University, of whose medical faculty he became Dean, but also to the needs of the Province; how much time and energy he bestowed upon the furthering of the interest of the profession at large and of the College no one but himself ever knew; all will acknowledge that his efforts were self-sacrificing and generous, and the results speak for themselves.

It is too much the custom of the world to withhold due praise while a man lives, and be content to lavish it upon ears that can no longer hear it;

we do not say it was so in Dr. Craik's case, because he lived to see much of his work bear fruit and to enjoy the reputation of his well-doing; but it is right that in the day of his death the physicians of this province and McGill University should formally acknowledge, and reiterate the acknowledgement of their debt to him. An extended account of Dr. Craik's life will be found elsewhere in these columns.

OF SPEAKING WITH AUTHORITY.

One is led often to wonder what it is necessary to possess in the way of reputation for knowledge or truthfulness, to be able to stand up boldly and declare some far-dragged theory or some monstrous untruth: the qualifications appear to be simple, namely that one's name can be spelt in English letters, and that one live at considerable distance from the field wherein the doctrine is to be promulgated.

It is a long-known experience among medical men, that the pronouncement gains or loses value from the character of the writer: the statistics of some men are to be depended upon, and those of some other men are just statistics; and the theories of one man are thoughtful and those of another man mere vapor. Professor Y. of San Francisco is reported as having made an authoritative statement: if Dr. Z. of Montreal made the same statement, he would be laughed at: we would say "we know Dr. Z., and he is not a man who has a right to be quoted on the subject. But, knowing nothing of Professor Y., we copy his statement, and lend him an air of authority he is probably quite unfitted to possess.

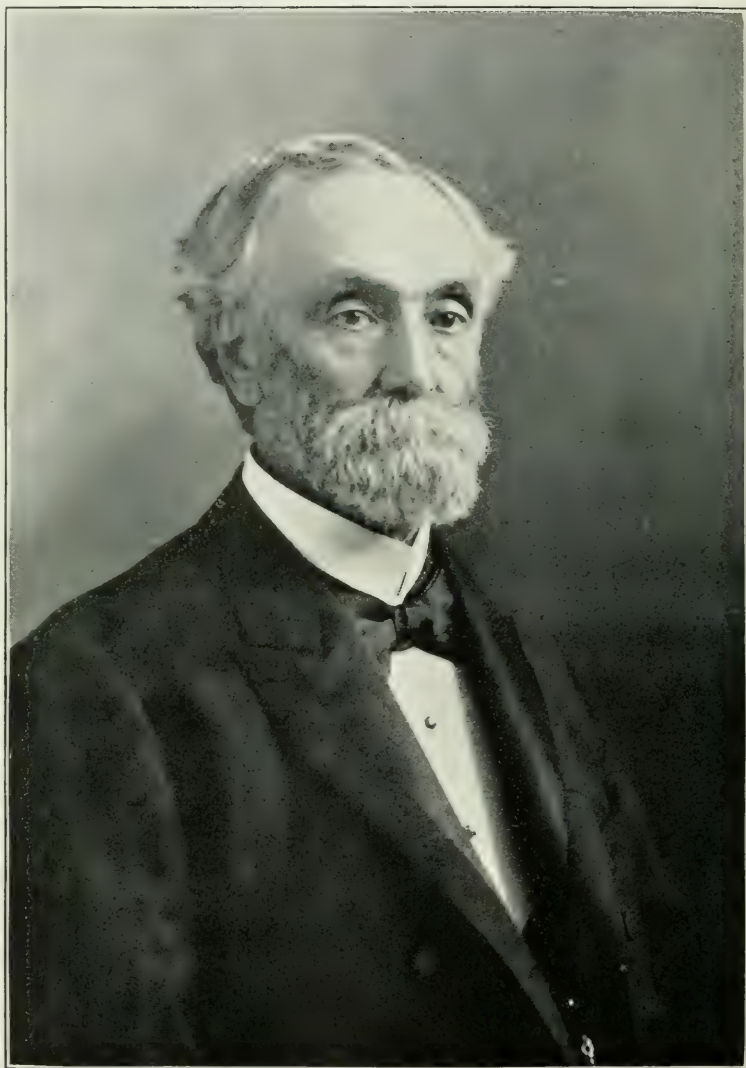
While the papers had lately announced with a good deal of unction that Prof. Dieulafoy had pointed out that operations for appendicitis were at times performed unnecessarily, they chose the fact of his so saying as a peg on which to hang a wonderful announcement from one Dr. Blanchard. It is the latter that forms the text of these remarks and not Prof. Dieulafoy, who merely played a variation upon the old theme that it is human to make mistakes; his paper had nothing in it, as far as we have seen, to which any one could take exception. But Dr. Blanchard's remarks are of quite another tenor. We are unable to say exactly who Dr. Blanchard is: there is a Professor Blanchard, a parasitologist, of the faculty of Paris, whose knowledge of parasites is great; if it be not he, we humbly ask his pardon. The Dr. Blanchard who speaks, states that his view is endorsed by Professor Metchnikoff. If Professor Metchnikoff does endorse these views, we will go further and say that not the authority of a thousand Metchnikoffs could render them anything but ludicrous. There is great likelihood that the eminent scientist's name has been dragged in without due warrant, for a paragraph that has eight misspelled words in less than forty lines may have origi-

inaccuracies. But we come to the new etiology of appendicitis, which is soberly considered worth the ink with which it is printed.

"Appendicitis is caused by three kinds of worms, of which the dreaded trygocephal is the most dangerous." What, then, is the trygocephal? Has one of our old well-known friends assumed this terrible mask, and is one of the sheep decked out terribly in the wolf's garb? It must be so. 'The dreaded trygocephal'!! What a name to conjure with! we hope the 'Sketch,' in its series of illustrations "The gentle art of catching things," will be good to us and give us a picture of this beast, from the gifted pencil of its contributor. "It is this creature that causes the severe pain accompanying appendicitis." Naughty trygocephal! We are the last to declare that our knowledge in medicine is in the least finite, but there are some facts in physiology and in kindred sciences, and the man who make the last quoted statement is misled. "The microscope has shown its presence in every case observed." Has the intestinal content had to bide its time till Blanchard examined it, that we should know that there are protozoans therein? Since trichocephalus is in the intestinal contents, are Koch's postulates so soon to be thrown overboard? "They attribute its presence to the use of vegetables grown in ground fertilized by deodorized and chemically treated products of sewers..." tinal contents, are Koch's postulates so soon to be thrown overboard? not necessary that these great thoughts should be allowed to diffuse too widely. It has generally been considered good housewifery to wash vegetables; or can it be that the eggs get into the very cells of the vegetables? Such a theory would be in keeping with the rest of their notions. Dr. Blanchard declares that "the use of sewage however skilfully treated, ought to be made illegal." Perhaps Dr. Blanchard considers sewage a luxury, and would go on to say that sewage ought to be banished from the earth, along with crime, sin, disease, and pain, extremes of temperature, and a dozen other things that we think annoying.

He goes on to say that "appendicitis... caused by foreign body... is the only form in which an operation is necessary." Unless one is especially gifted or temporarily inspired, one really cannot do justice to a statement like that. Its calm assertiveness is irritating. Perhaps it will be the professor's lot to be stricken by appendicitis, caused by something else than foreign body, and to be treated on the basis of his own beliefs. We wish him no worse fate.

We extend our congratulations to Mr. J. R. Roebuck, lecturer in chemistry in the Faculty of Medicine, McGill University, upon his obtaining the degree of Doctor of Philosophy from the University of Toronto.



THE LATE DR. CRAIK.

Obituary.

DR. CRAIK.

The grave has just closed over the remains of a man of no ordinary worth—one whose career was marked by much that was noteworthy. To analyze such a life is not an easy task for the writer; whose chief, whose only qualification, perhaps, is that he is one of the earliest surviving friends of him whose loss we all regret.

Robert Craik was known to me from the first year of his medical studies. In the session of 1850-51, when the late Dr. Bruneau—Professor of Anatomy at that period—was examining his class, my attention was drawn to one of the students then being examined. Question after question was put, and answer after answer came in a clear voice, and in an unhesitating manner. Dr. Bruneau, who loved to find among the students one more competent than another, continued his questions, going into more minute details, but the student was apparently quite at ease, and answered faultlessly. We had an opportunity of scanning his strong intellectual features. He seemed somewhat older than first year students usually are. He had a pale, a very pale face, an expansive brow over which jet black hair fell in wave-like profusion, a massive head, features cleanly cut, and a chin remarkable for its prominence. From a fellow student near me I learned the name of the pale-faced youth: it was that of the subject of these reminiscences.

Inexperienced youth is prone, at times, to cast the horoscope, and I, without the aid of the astrologer's art, had no hesitation in predicting that the career just being entered upon by the, till then, unknown student would be more than ordinarily eventful. Young Craik's subsequent student life was equally brilliant, and at the end of four years was signalized by his being awarded the prize for his final examination. He graduated with honours in 1854 and at once became House Surgeon to the Montreal General Hospital. He was already somewhat familiar with the work having, during the last years of his pupillage, been dresser to several, in turn, of the attending staff. As house surgeon he was markedly successful. In addition to his thorough efficiency, his shrewd common sense, his

genial manners, his mildness in ordering, his firmness in requiring the strictest obedience to his well thought out orders were important qualities.

In the meantime McGill University opened to him her portals by naming him Demonstrator of Anatomy. During his demonstratorship he supplemented his modest income somewhat, and added to his own stock of knowledge, by preparing medical students for their examinations.

In 1859, while still House Surgeon, he was named by his Alma Mater Curator of the Museum. In 1860 — after six years service as house surgeon, he was promoted to the much coveted position on the staff of attending physicians. At about the same time he was elected Professor of Clinical Surgery, and retained it until 1867. During that time he also taught medical jurisprudence for a short period.

Ultimately, on the death of Dr. Sutherland, he became Professor of Chemistry. Dr. Sutherland was, perhaps, one of the most brilliant lecturers that ever graced a professorial chair, and his death was deemed, at the time, an irreparable loss. But comparisons were not often made between the new teacher and his gifted predecessor and master. Both were deemed to have reached, each in his own way, a high degree of excellence and an eminence and a merit quite his own. The same facility of expression, and the same excellence of language distinguished both. Perhaps the elder had been somewhat less terse and concise, the younger less ornate, but both were equally lucid.

The science of chemistry affords unlimited scope for analysis and investigation. It occupies itself with material things; with the changes which matter undergoes in passing from form to form, and with the laws which govern and control those changes. Into this fascinating branch of science Dr. Craik entered, with all the energy of an energetic nature.

It has sometimes happened, especially in recent times, that a teacher of science, and especially of chemical science, deeming himself qualified thereto, has attempted to unravel the hidden relations which exist between the Maker and the made—the Creator and the created, and to measure out, limit, and define when and how far, the created—the made is self-existent and independent of all control from without itself. To such a height

of presumption the wise Craik never soared, and never attempted to soar. To his chemical class he ever taught that matter, so far as all human agency is concerned, is indestructible—that with all his ingenuity, and with all chemical agents at his command, the chemist is powerless to destroy the most infinitesimal portion of matter—small though it be as the mote which floats in the sunbeam—and is equally powerless to create. He taught that true science is immutable, resting on laws an Omnipotent has framed, but that our interpretation of it, being deduced from knowledge more or less imperfectly arranged, is constantly undergoing change.

And thus it happened that the atomic theory of John Dalton which, for three-quarters of a century had held undisputed sway, was claimed to be insufficient to account for many of the phenomena in nature, and must give place to the newer one of Höffmann. The relative number of atoms entering into a given compound was altered; chemical equivalents and combining volumes were changed; and, as a result, the terminology with which we were familiar in my student days was altered, and a new nomenclature was demanded in its place.

To unlearn and to forget what had been taught for three-quarters of a century in all our medical schools (and what Craik had himself taught during the whole period of his professorship), and to adopt new combining volumes, and therewith a new nomenclature, was a colossal work which Craik, now engaged in a large and lucrative practice, was not disposed to undertake. He therefore resigned the chair of chemistry, and took that of Hygiene and Demography.

Hygiene, t'is true, is not a distinct science as is anatomy or chemistry or physics. It is a compound science, but, for its full comprehension, and for its being properly taught, a knowledge of anatomy, of chemistry, of physics, and of other allied sciences is essential. Dr. Craik's six years labour in his anatomy class, and his many years in the chair of chemistry, fitted him in an especial manner for his new work, while his experience in the practice of medicine made the extension of his investigations from the individual to the general public both easy and natural. His course of hygiene and demography, while

drawing less largely on his time and energies, was an eminently successful one.

Subsequently (1889), on the death of Dr. R. P. Howard, he was chosen, unanimously it was said at the time, Dean of the Medical Faculty of his Alma Mater. It required qualities of no ordinary character to enable one to fill, acceptably, a place once occupied by the painstaking, diligent, conscientious Holmes; by that robust intellect and commanding personality, G. W. Campbell; or by that hard-working Howard, of courteous bearing and of gentlest memory—but Dr. Craik seemed to fill, at once, all requirements. While Dean of the Medical Faculty he guided it, we are assured, with tact and judgment, and more by the clearness and wisdom of his mental survey, than by the authority of his position.

One day it was announced that Dr. Craik had resigned the deanship! No one could conjecture why, and the public was not taken into his confidence. From that time forward, notwithstanding frequent interruptions by sickness, Dr. Craik continued steadily the practice of his profession. At length the last illness came—a long one, endured with great patience. In November last a cough began to trouble him. His physician—one of his former pupils in whom he had unbounded confidence—early informed his patient of the existence of pulmonary tubercle. Craik did not question the correctness of that opinion—but he found it difficult to understand how, when, and where, at his time of life, the unwelcome bacillus should have found entrance into his system.

Omnes morimur, says the teacher, et aquæ quasi dilabimur in terram quæ non revertuntur.

It is said that, with most men, changes are effected little by little, and death gradually prepares them for the final stroke. This is not, methinks, a truth of universal application. Be that as it may, it was a great satisfaction to his friends to observe an entire absence alike of that ostentation which is so apt to deceive others; and of those almost nervous, hysterical emotions by which patients are so apt to be themselves deceived. Far otherwise was it with Craik. He spoke of the great change impending with a calmness which was truly edifying. There was no repining—no expressed desire to live—nor yet to

die—but a cheerful readiness to go whenever his Maker should choose to summon him.

Ere he slips from memory, as the water which passes to the ocean and will never return, I would hastily summarize thus: Dr. Craik's *intellectual* qualities were of a very high order; his insight was unerring—his view of most questions deep and penetrating—and his discernment clear and unclouded.

His memory was most retentive—and nothing was stored therein in confusion. There was method in all his acts, and even in his fancies, and every thing with him was arranged with a view, seemingly, to some desirable end, proximate or remote. He was emphatically a worker. He loved work for its own sake; and he loved it for the return it brought in contentment, and in the consciousness of being the better qualified for a higher degree of usefulness. In his work he was most methodical. He traversed no needless course—but with an object clearly in view he examined thoroughly, and recorded truthfully.

But more important still, his *moral* qualities were of a high order. There was in Dr. Craik a singleness of purpose which I have rarely seen equalled. He was scrupulously honest—honest in thought, honest in deed, honest in word. With him honesty was not a matter of policy, for he who acts on that principle is, as Whately says, not an honest man. Craik's honesty was the legitimate offspring of his truthfulness of character, and of a strict conformity to fact.

As a result: his position in the profession and in society was exceptionally influential, while to the younger generation he was a safe beacon for their guidance.

And what was the influence upon himself? In a word: His actions being guided seemingly by the highest, the most rigid principles of truth and justice, neither the affection of his students; nor the regard or liking of his patients; nor the esteem of his colleagues made inroad upon his modesty, and while he kept himself aloof from presumption and self-conceit, he gave evidence of neither weakness nor inconstancy.

W. H. H.

THE AMERICAN TUBERCULOSIS EXHIBITION.

Under the auspices of the National Association for the Study and Prevention of Tuberculosis, and of the Committee on the Prevention of Tuberculosis of the Charity Organization of New York, the American Tuberculosis Exhibition was organized and the first exhibit was held in the Museum of Natural History in November, 1905.

The object of the Exhibition was to show the methods that are being adopted throughout America and Europe to prevent and cure consumption, and by a practical object lesson to arouse and interest the public and medical profession to concerted effort in preventing this white plague, and to awaken the conscience of the public to recognize the individual's responsibility.

The exhibition was extremely varied and instructive to the laity, sociologists and the medical profession. There were in all upwards of ninety exhibits by different Boards of Health, Sanatoria, Hospitals, dispensaries and educational associations, averaging more than 5000 square feet of wall space. Besides charts and photographs there were many models of appliances and buildings illustrating easy and cheap methods of treating tuberculosis patients in their homes. Moreover a series of lectures were given while the Exhibition was open by various prominent sociologists, labor organizations and physicians, which were attended by appreciative and varied audiences.

The remarkable success of the exhibition was proved by the immediate and urgent request to have the exhibition repeated in various cities throughout the United States. During the past seven months seven cities have been visited with an attendance of upwards of 200,000 persons. That interest has grown in this instructive exhibition is shown by the fact that while in New York only 17,000 persons visited it during the fortnight, in Milwaukee, where it has recently been, 54,000 people visited it during a like period. Reports show that wherever the exhibition has been an enthusiastic interest was aroused and practical results in the campaign against tuberculosis have followed.

The National Sanitarium Association of Canada have arranged to bring the exhibit to Toronto in August for a fortnight beginning with the opening of the meeting of the British Medical Association. It is hoped thus that more than a local interest will be elicited and that professional men through the Dominion and laymen through the province will take the opportunity of visiting this great object lesson on what is at present being done to prevent and cure tuberculosis.

The following were a few of the striking features shown at the New York exhibition, the greater number of which will be exhibited in Toronto.

In the exhibit of the New York City Department of Health were included photographs and charts illustrating in detail methods on reporting, recording, following up and treating tuberculosis cases; maps of wards in New York City showing grouping of houses in which cases of tuberculosis have been reported; illustrations and explanations of methods employed at the out-patient clinic of the Department.

The New York Tenement House Commission presented illustrations of the appalling conditions under which the New York poor live, making plain the hopelessness of the tuberculosis problem until the public conscience has awakened and insisted that such things shall not be. They showed a model of a typical dark room in a tenement house, one of 360,000 of its kind in New York City. The only source of light and ventilation is a window in a court which is dreadful in squalor and filth. The onlooker is only partly reassured by the statement that the articles he sees before him have been sterilized. In pleasing contrast is a model of the same room after the visiting nurse has taken charge. Light has been admitted by cutting a window, and cleanliness, neatness and comfort have replaced the conditions of misery. The commission showed also various models in plaster and papiermache of tenement houses both typical and ideal. One model of a block illustrates a type of building in which 4000 persons have lived at one time.

The Committee on the Prevention of Tuberculosis (New York City) sent interesting charts illustrating the incidence of tuberculosis and resulting mortality in different races and nationalities under various social conditions and at different periods of life.

The Maryland State Board of Health and the Tuberculosis Commission of Maryland showed a most instructive group of graphic illustrations of various sociological statistics both general and local.

The Chicago Department of Health exhibited large charts of wards with reported cases of tuberculosis plotted thereon by different coloured pin heads—the different colours representing different years.

Various associations in cities and larger towns formed to be both educational and practically helpful, exemplified their methods of organization and the work that had been accomplished. As examples may be mentioned the Maryland Association for the prevention and Relief of Tuberculosis, the Cambridge Anti-tuberculosis Association, and the Boston Association for Relief and Control of Tuberculosis.

The practical methods of the visiting Nurses Association of Cleveland, Boston, Baltimore and Chicago were suggestive of how much might be done in every town that has the least interest in attempting to fight consumption.

The exhibits of the special dispensaries for tuberculous out-patients of the New York Department of Health, the Vanderbilt clinic, the Presbyterian, the Gouverneur and New York Post Graduate Hospitals, and of the Henry Phipps Institute in both Philadelphia and Baltimore were very helpful to those interested in the detail of tuberculosis clinics.

Some twenty-four sanatoria and hospitals were represented by photographs, charts graphically illustrating results, charts showing climatic conditions of various localities, also tables with details of cost, maintenance, various illustrations of clinical forms in use, and other matters of interest. In most cases there were models illustrating simple and effective housing of patients living the out-of-door life. All the well-known institutions from the Atlantic to the Pacific were represented.

Of particular interest was the exhibit of Clinton Prison, at Dannemora, New York, showing what can be done in a large institution to control tuberculosis.

The Sea Breeze Hospital for Children attracted much attention. It is the only institution of the kind in America.

The French and German exhibits were late in arriving and only a few were in position when the exhibit closed. Maps of both countries showed the geographical position of the various sanatoria. Illustrative charts of the objects of and work done at several French anti-tuberculosis dispensaries were shown and here were some particularly interesting tables of the diets of various classes of working men, the actual being compared with the ideal relative expenses also compared. Tables also illustrated the relative value of different articles of food.

Of especial popular interest were the laboratory exhibits. The Henry Phipps Institute showed admirable gross specimens, prepared by the Kaiserling method, illustrating tuberculosis in various organs at different stages. The New York College of Physicians and Surgeons exhibited along similar lines. The Saranac Laboratory exhibit of tubercle bacilli from Koch's first culture and also of human, bovine, avian and piscian forms and the various products obtained from the tubercle bacillus was always interesting. A collection of various acid-fast bacilli, showing the resemblance of the various relations of the tubercle bacillus, was by the National History Museum.

Practical object lessons illustrating the dissemination of disease were not wanting; culture plates illustrating dissemination of micro-organisms from sputum, by coughing, by sneezing, and by the agency of flies; a cotton filter which had been placed in the air shaft of an apartment house; and a collection of filthy pencils and chewing gum used by school children.

Enough has probably been said to illustrate the broad character of the exhibition. The various exhibits were placed under the headings of their respective states and any particular point of interest could readily be found. Throughout the day and evening explanatory tours were conducted by various interested persons both lay and professional. Visitors were from all classes of the community and the exhibit was not least appreciated by those who had personal experience of dreadful local conditions.

Canada was represented only by the National Sanitarium Association and the Toronto Free Hospital for Consumptives. In the Toronto Exhibition it would be desirable to have some illustrations of the work done elsewhere in Canada up to the present time. There are various institutions and organizations which might well be represented.

The Toronto exhibition will be held in some building centrally situated but not yet determined upon. A programme of addresses which should prove instructive and interesting is being arranged for every second evening of the fortnight. Stereoptican views will be given every evening and there will be specially conducted tours for the purpose of explaining various features of the exhibit. Physicians are urged to attend and to draw the attention of the public to the exhibition.

Individuals or associations who would in any way care to assist will have their inquiries promptly answered and all information furnished by addressing J. S. Robertson, Secretary National Sanitarium Association, 28 Adelaide St., West, Toronto, Can.

Already such inquiries are commencing to reach the secretary, one to-day being from an official of the Women's Institute, members of which desire to attend some of the meetings.

(Communicated by Charles D. Parfitt, M.D., M.R.C.S., Eng.)

TRAVELLING ARRANGEMENTS—BRITISH MEDICAL ASSOCIATION.

On the occasion of the visit of the British Medical Association to Toronto, Ont., August 21-25, 1906, the Eastern Canadian Passenger Association has authorized the following fares and conditions:

1. *Delegates from Canada, United States and Mexico.*—Lowest one-way first-class fare for the round trip on certificate plan from all points in Eastern Canadian Passenger Association territory. Passengers going rail, returning Richelieu and Ontario Navigation Co., or vice versa, rate to be one and one-half rail fare. Certificates to be valid and fee of 25 cents charged (tendered connecting lines and associations.)

2. *Extension of Time Limit.*—On deposit with Joint Agent of properly validated standard convention certificates or return portions of round trip tickets on or before August 28th, 1906, and on payment of \$1.00 at time of deposit, an extension of time until September 30th, 1906, will be granted.

3. *Delegates from Outside of Canada, United States and Mexico.*—(a.) On presentation of certificate signed by G. H. Webster, Secretary E. C. P. Association, and countersigned by F. N. G. Starr, Secretary of the Canadian Committee, or Guy Elliston, Secretary of the British Medical Association, one-way tickets to be sold between all points in Canada, at one-half lowest one-way first-class fare, round trip tickets at lowest one-way first-class fare, except as per Clause b.

(b.) *To North Pacific Coast Points and Return.*—Agents at Montreal and Toronto only, to sell round trip tickets to North Pacific Coast points, viz.: Vancouver, Victoria and Westminster, B.C.; Bellingham, Everett, Seattle and Tacoma, Wash., and Portland, Ore., as follows: Going and returning via direct routes, usual diverse routes to apply, at through round trip rate made by adding lowest one-way first-class fare to Chicago to \$62.50 tendered therefrom.

(c.) *To Los Angeles and San Francisco and Return.*—Agents at Montreal and Toronto only, to sell round trip tickets to Los Angeles and San Francisco, Cal., and return as follows: Going and returning via direct routes through Chicago, usual diverse routes to apply, at through rate to \$62.50 tendered therefrom. Going via direct routes, returning round trip rate made by adding lowest one-way first-class fare to Chicago to \$62.50 tendered therefrom. Going via direct routes, returning through North Pacific Coast points, viz.: Vancouver, Victoria or Westminster, B.C.; Bellingham, Everett, Seattle or Tacoma, Wash., or Portland, Ore., or vice versa at through round trip rate made by adding lowest one-way first-class fare to Chicago to \$75.00 tendered therefrom.

4. *Dates of Sale for Side Trip Tickets for Delegates from Points Outside Canada, United States and Mexico.*—July 1st to September 30th, 1906, inclusive, except that dates of sale to North Pacific Coast and California points will be July 1st to September 7th, 1906, inclusive, with going transit limit of September 20th, 1906.

5. *Return Limit for Side Trip Tickets for Delegates from Points Outside Canada, United States and Mexico.*—September 30th, 1906.

6. *Side Trips from Toronto.*—Side trip tickets will be sold from Toronto only, to Delegates from the Maritime Provinces, from points west of Port Arthur and from the United States and Mexico, on presen-

lation of properly validated convention certificates, return portions of round trip tickets, or deposit receipt if extension of time is availed of as per paragraph 2), at lowest one-way first-class fare for the round trip to all points in Canada, except that fares to North Pacific Coast points are to be made by adding lowest one-way first-class fare to Chicago to \$62.50 tendered therefrom. Tickets may also be sold to North Pacific Coast points in the United States and to Los Angeles and San Francisco, Cal., and return, on basis of fares shown in paragraph 3, clauses b and c.

Side Trips for Ontario and Quebec Delegates.—Side trip tickets will be sold from Toronto only, to Delegates from Ontario and Quebec to all points in Canada west of and including Sudbury and east of and including Montreal, Que., at lowest one-way first-class fare for the round trip, except that in ticketing to North Pacific Coast points in Canada, fares and routes as shown in paragraph 3, clauses b and c, will apply. Tickets may also be sold to Ontario and Quebec Delegates to North Pacific Coast points in the United States and to Los Angeles and San Francisco, Cal., and return at fares and routes as shown in paragraph 3, clauses b and c. Tickets as per this clause will be sold only on presentation of properly validated convention certificate, or deposit receipt (if extension of time is availed of as per paragraph 2), or, in the case of Toronto local physicians, on presentation of certificate of form designated on page 2, signed by G. H. Webster, Secretary, E.C.P. Assn., and F. N. G. Starr, Secretary of the Canadian Committee, British Medical Assn.

7. *Dates of Sale and Limits for Side Trips from Toronto for Delegates from Canada, the United States and Mexico.*—Thursday, August 23rd, to Saturday, September 1st, 1906, inclusive. Tickets to North Pacific Coast and California points to bear going transit limit of September 20th, 1906. Final return limit September 30th, 1906.

8. *Validation of Return Portions of Tickets to North Pacific Coast and California.*—Return portions of tickets to North Pacific Coast and California points must be validated by Joint Agent at destination, for which a validation fee of fifty cents will be charged.

9. *Stop-overs on Side Trip Tickets.*—Side trip tickets to all points in Canada will permit stop-overs at any intermediate point going and returning within final limit, except that on side trip tickets to North Pacific Coast and California points stop-overs will be allowed on going trip from North Pacific and California points, stop-overs will be allowed within final limit on deposit of ticket with Agent at stop-over point immediately upon arrival, except that tickets reading for return via Canadian Pacific, Great Northern Pacific will not require to be deposited.

10. *Additional Amounts Required via Steamer Lines.*—On several steamer lines extra charge will be made for meals, berths, etc. The following arbitraries have been advised:

Canadian Pacific Railway Upper Lake Steamships.—Going lake, returning same, \$8.50 additional to be collected. Going lake, returning rail, or going rail, returning lake, \$4.25 additional to be collected.

Richelieu & Ontario Navigation Co., St. Lawrence Route.—Delegates holding return portions of round trip tickets reading all rail to Toronto may return via steamer on presentation of ticket to purser and payment of following amounts, viz.: \$6.50, Toronto to Montreal; \$3.50, Kingston to Montreal.

Northern Navigation Co.—One-way meal and berth arbitraries. From Collingwood to Owen Sound: to Sault Ste. Marie, \$5.00, Mackinac, \$7.00, Petoskey, \$8.50, Killarney, \$2.00, Parry Sound, 75c. From Sarnia: to Sault Ste. Marie, \$3.50, Port Arthur and Fort William, \$8.50, Duluth, \$11.00.

Algoma Central and Hudson Bay S.S. Line.—Meals and berth arbitraries. From Southampton, Kincardine, Goderich and Sarnia to Sault Ste. Marie and Manitoulin points, one way, \$4.00; round trip, \$8.00.

11. *Joint Agency at Toronto.*—Joint agency at Toronto will be located at Room 101, Union Station, and will be conducted in the name of G. H. Webster, from August 21st to September 24th, 1906. Office hours, 9.00 a.m. to 6.00 p.m.

Addendum to Drs. Molson and Gordon's Case Report, page 504.

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Reviews and Notices of Books.

GASTRIC SURGERY. By HERBERT J. PATERSON, M.A., M.B., B.C., (Cantab) F.R.C.S., England. Hunterian Professor of Surgery & Pathology at the Royal College of Surgery. Assistant Surgeon to the London Temperance Hospital. London: Ballière, Tindall & Cox, 1906. Canadian Agents, J. A. Carveth & Co., Toronto, Ont \$2.00.

The book is based upon a portion of Mr. Paterson's Jacksonian prize essay, and opens with a very interesting chapter on the history and operation of gastro-jejunostomy. Many have contributed to the perfection of gastric surgery, as it exists to-day. The stomach was a forbidden field in the days of Hippocrates. Larrey, surgeon to Napoleon, observed "Les plaies de l'estomac ne sont pas mortelles dans tous les cas."

The present state of gastric surgery is one of which the profession has some reason to be proud. A mortality of a few years ago of 30 per cent. in 2,548 cases of gastro-jejunostomy, is now reduced by Mr. Mayo Robson, to a mortality of 3.7 per cent. in a series of posterior jejunostomies, including simple and malignant cases; and Mr. Moynihan has recently recorded a series of gastro-jejunostomies for chronic gastric ulcer, uncomplicated either by an acute perforative or severe hæmorrhage, with a mortality of little over 1 per cent. The Mayos have reported 307 gastro-jejunostomies for non-malignant disease with a mortality of 6 per cent., while in the last 81 operations, there has been only one death.

Mr Paterson then takes up some of the more interesting questions connected with gastro-jejunostomies, and one of these certainly is "regurgitant vomiting," a condition known as "circulus vitiosus." Here, he is in accord with a very generally accepted opinion among modern operators: that the condition is really one of obstruction, and Mr Pater-

son would place the obstruction at the efferent opening of the stomach. The idea that the presence of bile or pancreatic secretion in the stomach was the cause of regurgitant vomiting, is pretty well abandoned, and Mr. Paterson quotes a case of Mr. Moynihan's, which in a way, amounts to an experiment in man which confirms the findings in animals. In a case of complete traumatic rupture of the intestine at the duodeno-jejunal junction, the torn ends of the duodenum and jejunum were closed by suture, so that all the bile passed into the stomach through the pyloric orifice, and gastro-jejunostomy performed. The patient never suffered from vomiting, remaining in perfect health until his death, 14 weeks after the accident.

Mr. Paterson still leaves a loop 8 to 12 inches in length, while Mr. Moynihan and the Mayos', whose success in this work is phenomenal, have some time since given up the loop altogether. Mr. Paterson then goes into the after history of patients, upon whom gastro-jejunostomy has been performed; and without going into detail, it may be said, that he finds, speaking of non-malignant cases, that in only eight or in less than 7 per cent. of 116 cases which he has been able to trace, has the result of gastro-jejunostomy proved unsatisfactory. Sufficient space is given to the discussion of other operation details, including Mayo Robson's bone bobbin, Murphy's button, the Laplace forceps and the various sutures and suture materials. He finds that on the whole, mechanical appliances, are attended with uncertain results and that a small opening is apt to prove unsatisfactory. He estimates the risk of a subsequent perforation of a peptic jejunal ulcer as under 2 per cent.

In studying the end results of operated cases, he is able to show that patients may regain and maintain their normal weight, and live for nearly 20 years in perfect health. There can be no reason to suppose that the operation of gastro-jejunostomy tends to shorten life.

Mr. Paterson, in general, agrees with Munro, of Boston, and Mayo, that Finney's operation gives after results, hardly so satisfactory as those following gastro-jejunostomy. Mr. Paterson discusses the late results of gastric ulcer, including perforation, the hour glass stomach, and other contractions and adhesions, pointing out the cases in which surgical methods should be adopted in their treatment and the satisfactory results that can thus be obtained.

Very interesting indeed, is the chapter on "Cancer of the Stomach," in which the various procedures are described, and the satisfactory results that may be obtained on patients operated on fairly early, and according to modern ideas. He estimated that 10 per cent. of these patients submitting to operations are probably cured. These figures, al-

though encouraging, should act as a stimulus to the seeking after better results. An earlier diagnosis should enable us to achieve results in cancer of the stomach, quite equal to those obtained in malignant disease of other organs. The publisher's work is well done, and the book is to be commended.

TEXT-BOOK OF MATERIA MEDICA THERAPEUTICS AND PHARMACOLOGY.

By GEO. F. BUTLER, Ph. G., M.D., fifth edition revised by Smith Ely Jelliffe, M. D., Ph.D. J. A. Carveth & Co., Canadian Agents.

MATERIA MEDICA AND THERAPEUTICS. By A. A. STEVENS, A.M., M.D.

Fourth Edition. J. A. Carveth & Co., Canadian Agents.

A MANUAL OF MATERIA MEDICA AND PHARMACOLOGY. By DAVID M.

R. CULLRETH, Ph.G., M.D. Fourth Edition. Lea Brothers & Co., Philadelphia.

These three text-books have recently been revised and adopted to the eighth revision of the U. S. P. The vexed question of classification is still unsettled and from the nature of the problem is liable to remain so until the subdivisions of this extensive subject become more definitely established. Prof. Cullreth whose work is more a treatise on materia medica than on therapeutics has adopted a grouping founded upon the origin of the drug, whether animal, vegetable, or mineral, which will prove of great assistance to the pharmacist; the relationship of crude drugs with their derivatives being maintained. The other authors follow the therapeutic classification which will probably be of greater use to the medical student.

In the first of these works pharmacy is quite extensively treated. The introductory chapters afford a comprehensive view of the subject and its relation with science in general. The historical notes are very interesting and provide a broad foundation for the study of therapy.

The second work contains a useful resumé of the changes in the last edition of the U. S. P. The chapters on "Remedial measures other than drugs" are well up to date, dealing with electricity, movement treatment for locomotor ataxia, the Schott or Nauheim treatment, etc. A considerable portion of the book is devoted to "Applied Therapeutics." This is clearly written and to the point.

In Prof. Cullreth's book the preliminaries treating of modes of employing remedial agents and drugs acting on the various systems, regarded from a general point of view, are full. The illustrations while not artistic, have been carefully drawn and portray the details of structure clearly. The chapter on the "Microscope and its use in Materia

Medica," will be of great use to the scientific student as the matter contained in it is not usually taught in the colleges.

Taken together these three books maintain the high standard already set and are well abreast of the recent advances in *Materia Medica* and *Therapeutics*. The paragraphs on the individual drugs, etc., are of necessity condensed, thus bringing the important points prominently before the reader.

NASAL SINUS SURGERY. with Operations on Nose and Throat. By BEAMAN DOUGLASS, M.D. Professor of Diseases of the Nose and Throat in the New York Post-Graduate School and Hospital. Illustrated with 67 full page half-tone and coloured plates, including nearly 100 figures. F. A. Davis Company, publishers, Philadelphia.

This book, we are told in the preface, has been written because of demands made for such a work by physicians who have worked under the author's direction. It should certainly fulfil the requirements, and will, we are sure, be a valuable aid, especially to those making a special study of the nose and throat.

Although not a large volume (being of 264 pages), Dr. Douglass has gone into the subject thoroughly, and, while the methods of others are also described there is abundance of evidence of original work.

The illustrations for the most part from photographs of preparations are excellent, and aid greatly in giving one a clear understanding of the subject discussed.

The first chapter is devoted to an anatomical review of the nose.

The frontal, ethmoidal, maxillary and sphenoidal sinuses are the subject matter of the next four chapters, a chapter being allotted to each. These sinuses are most interestingly and completely discussed from an historical, anatomical, therapeutic, and operative standpoint.

The sixth chapter deals with deflections of the nasal septum, operations for nasal deformities and paraffin injections.

After considering the anatomy of the nasal septum, the various forms of deflection are described with the methods of operations for their correction, among which are the Asch, Gleason and submucous resection.

This last, viz., the submucous resection, which has become so popular of late and has, in the hands of so many operators, given such satisfaction, is, perhaps, not treated as fully by the author as its merit entitles it to.

He mentions as objections to this operation, the length of time required to accomplish it, and the fact that perforations often result

from sloughing or from instrumentation. As to the first we are inclined to agree, but this is not a serious objection, the benefit derived subsequently fully compensating for the time consumed; besides, the after treatment is so simple that there is an actual saving of time eventually.

As to the second objection, one's experience would show a very small proportion of perforations and these are almost entirely confined to the earlier cases of the series.

External nasal operations for the relief of deformity are next dealt with in a sound and practical manner.

In Chapter VII. turbinectomy is fully discussed, while the tonsils, adenoids and uvula are the subject matter of chapter VIII. Chapter IX. is reserved for Exostoses and Synechiæ, the book being concluded by a chapter on Laryngotomy and Tracheotomy, including Bronchoscopy. The space at our disposal necessarily renders but a brief description of this excellent work possible, but we would strongly advise its careful perusal by those interested in the study of rhinology and laryngology and others who wish to add to their store of knowledge of the nasal sinuses, and nose and throat surgery.

W. H. J.

HEART DISEASE AND ANEURYSM OF THE AORTA. By SIR WILLIAM H. BROADBENT, Bart., K.C.V.O., and JOHN F. H. BROADBENT, M.D., F.R.C.P. Fourth edition. London: Baillière, Tindall & Cox, 1906.

In nine years, since the first edition of this work appeared, it has advanced to a fourth edition, which appears with additions and emendations, mostly from the hand of Dr. John F. H. Broadbent. The book is too well known to require any commendation in this column: it suffices to say that the additions are in keeping with the general style of the previous additions. Broadbent's "Heart Disease" is essentially the product of the physician, who has observed long and keenly: those who know the author know well his thorough, complete methods of examination, and his book in every page reflects this. Never a work of minute anatomical or pathological detail, it is essentially a practitioner's book, and as such, a very satisfying one.

In the fourth edition chapters are added on the pulse, on coronary disease, on bradycardia, and on atheroma of the aorta. Sir William Broadbent has amplified the chapters on angina pectoris and on functional disturbances of the heart. At a time when there is so much study being devoted to the degenerations of arteries, and the whole

question of arterio-sclerosis is in a state of transition, it is not to be wondered at, if the chapters dealing with those subjects have scarcely the dogmatic force that is so characteristic of the book in general. The work of Mackenzie, which has excited much admiration, is adequately recognized. Finally, as has been often stated before, there is no book more satisfying to the practitioner; this has been amply proven by the sale which has already brought it into its fourth edition.

DISEASES OF THE EYE. By CHARLES H. MAY, M.D., and CLAUD WORTH, F.R.C.S., Eng. Ballière, Tyndall & Co, 8 Henrietta Street, Covent Garden, London; 1906.

This is an English edition of Dr. May's Manual of Diseases of the Eye, which has already passed through four editions in the United States.

Mr. Worth is associated with Dr. May in the production of the English edition.

The general system of the earlier editions has been adhered to, but a good deal of new matter has been added. The book is profusely illustrated, some of the prints being very good, and others extremely poor.

That the work has supplied a demand is evidenced by the rapidity with which the earlier editions have been exhausted. The main original work in the book is Mr. Worth's dissertation on Muscular Deviations, the use of his amblyoscope, and a description of his advancement operation.

J. W. S.

ELLIS'S DEMONSTRATIONS OF ANATOMY BY DISSECTION. Revised and edited by CHRISTOPHER ADDISON, M.D., B.S., F.R.C.S., 12th edition. New York: William Wood & Co., 1906.

Who that has taught anatomy in the dissecting room has not appreciated Ellis's Anatomy? Who that took an interest in the naked eye anatomy of the nerves has not studied Ellis's dissection with benefit. It was always a pleasure to read Ellis; the style was so good and the method of expression so clear, and so many new ways of looking at the various regions were disclosed, that for a teacher it was a treasure, though students found it hard and preferred the more simple yet less exact Heath. This 12th edition, edited and revised by Dr. Addison, known to us as an accomplished anatomist, keeps up the well earned reputation of Ellis. Much of the matter has been rearranged and much new matter introduced; many new illustrations have been added and

many of the old familiar plates, we are glad to see, remain. The order of dissection, as is usual now, commences with the back. We can heartily recommend this 12th edition of an old favourite. Any student who really wishes to work at anatomy will not regret having this book.

Medical News.

McGILL UNIVERSITY GRADUATES.

The following are the results of the midsummer examinations of the Medical Faculty of McGill University.

PRIZE LIST.

Holmes Gold Medal for highest aggregate in all subjects forming the Medical Curriculum:—R. S. MacArthur, Summerside, P.E.I. Final Prize for highest aggregate in the Fourth Year subjects: T. A. Lomer, B.A., Montreal, Que. Wood Gold Medal for best examination in all the Clinical branches: R. McL. Shaw, B.A., Penobsquis, N. B. McGill Medical Senior Prizes: First Prize:—F. B. Gurd, B.A., Montreal; Second Prize:—R. J. Monahan, Montreal. Honours in aggregate of all subjects. 1, R. S. MacArthur; 2, T. A. Lomer, B.A.; 3, R. McL. Shaw, B.A.; 4, A. W. Hunter; 5, O. S. Hillman; 6, C. S. Williams; 7, D. P. Hanington; 8, G. R. Mabec, Phm. B.; 9, F. B. Gurd, B.A.

PASS LIST.

FINAL SUBJECTS.

The following gentlemen, 92 in number, obtained the degree of M.D., C.M., from the University:—Adams, H. P., D.D.S., Danville, Que.; Allen, H. C. B., Cape Tormentine, N.B.; Arnold, D. R., B.A., St. John, N.B.; Auld, J. W., Covehead, P.E.I.; Auston, J. B., Brighton, Ont.; Bercovitch, A., Montreal, Que.; Blake, E. A., South Stukely, Que.; Bonelli, V., Jr., B.A., Vicksbury, Miss., U.S.; Brown, G. T., Danville, Que.; G. H. Burke, Ogdensburg, N.Y., U.S.; Callbeck, A. DesB., Tryon, P.E.I.; Cameron, A. B., Lancaster, Ont.; Chandler, A. B., B.A., Montreal, Que.; Christie, H. H., Martintown, Ont.; Clarke, G. S., Dutton, Ont.; Conroy, B. A., Montreal Que.; Donnelly, J. H., Buffalo, N.Y., U.S.; Duggan, R. G. Hamilton, Ont.; Ewart, D., Ottawa South, Ont.; Field, B. R., Port Elgin, N.B.; Flegg, R. F., Ottawa, Ont.; Forbes, A. E. G., Little Harbor, N.S.; Fraser, D. R., Montague Bridge, P.E.I.; Fraser, T. B., Liverpool, N.S.; Fripp, G. D., B.A., Montreal, Que.; Gillies, G. E., Teeswater, Ont.; Gourlay, H. B., B.A., Montreal, Que.;

Green, T. B., B.A., Virden, Man.; Groves, Osler M., Carp, Ont.; Gurd, F. B., B.A., Montreal, Que.; Hackett, J. F., B.A., Meriden, Conn., U.S.; Hammond, J. F., Ironside, Que.; Hanington, D. P., Victoria, B.C.; Hardy, A. N., Allendale, N.S.; Hewitt, T. J., Montreal, Que.; Hill, R. C., M.D., Great Falls, Mont.; Hillman, O. S., Hamilton, Ont.; Holden, C. P., St. John, N. B.; Howlett, G. P., Ottawa, Ont.; Hunter, A. W., Durham, Ont.; Hunter, T. V., East Florenceville, N.B.; Johnson, B. F., Midland, N.B.; Joughins, J. L., Moncton, N.B.; Keddy, O. B., B.A., Milton, N.S.; Kelly, A. E., Meaford, Ont.; Kerfoot, H. W., Smith's Falls, Ont.; Layton, J. S., B.A., Oakfield, N.S.; Lomer, T. A., B.A., Montreal, Que.; Lyon, G. R. D., Ottawa, Ont.; MacArthur, R. S., Summerside, P.E.I.; MacCallum, D. G., Montreal, Que.; MacDonald, P. A., Alma, N.B.; MacLeod, J. M., Quincy, Mass., U.S.; MacNaughton, G. K., B.A., Black River, N.B.; McEwen, E. H., Vancouver, B.C.; McMillan, J. A., Finch, Ont.; Mabee, O. R., Phm. B. Vittoria, Ont.; Mair, W. L., Clinton, Ont.; Malcolm, D. C., St. John, N.B.; Margolese, O., Montreal, Que.; Mercer, T. C., Chillawack, B.C.; Michaud, J. N., Campbellton, N.B.; Monahan, R. J., Montreal, Que.; Mullin, J. J., Montreal, Que.; Munroe, A. R., Woodstock, Ont.; Munroe, F. D., Moose Creek, Ont.; Nathan, D., Montreal, Que.; Parsons, W. H., Harbour Grace, Nfld.; Patterson, W. J., B.A., Moncton, N.B.; Payne, G. A. L., Leonora, British Guiana, W.I.; Peat, G. B., Andover, N.B.; Petersky, Sam'l., Vancouver, B.C.; Ralph, A. J., Phm. B., Montreal, Que.; Reilly, W. H., Montreal, Que.; Rilance, C. D., Montreal, Que.; Risher, F. O., B.A., Dravosburg, Pa., U.S.; Ritchie, C. A., B.A., Winnipeg, Man.; Robbins, E. E., Halifax, N.S.; Rothwell, O. E., B.A., Regna, Sask., N.W.T.; Shaw, R. McL., B.A., Penobsquis, N.B.; Sheahan, J. J. Haley's, Ont.; Sims, H. L., Ottawa, Ont.; Swift, T. A., Montreal, Que.; Tilley, A. R., Ottawa, Ont.; Turnbull, J. W., Springhill, Ont.; Walker, J. J., B.A., Ormstown, Que.; Walsh, C. E., Jordan Falls, N.S.; Weldon, R. C., Jr., Halifax, N.S.; White, J. H., Ottawa, Ont.; Williams, C. S., Tyne Valley, P.E.I.; Young, A. MacG., Millville, N.S.

ROYAL VICTORIA HOSPITAL.

Monthly Report for June.

Patients admitted, 294; patients discharged, 274; patients died, 22; Medical, 84; surgical, 131; ophthalmological, 27; gynæcological, 32; laryngological, 20.

Outdoor department.—Medical, 906; surgical, 830; ophthalmological, 317; gynæcological, 95; laryngological, 364. Total, 2,512. Number of ambulance calls, 72.

At a meeting of the Medical Faculty of McGill University, on July 15th, the following resolution with reference to the death of the late Dr. Craik was passed.

"Resolved that the members of the Faculty of Medicine place on record their profound regret at the death of their colleague and late dean, Dr. Robert Craik.

"For the half century during which he has been connected with this faculty, as clinical assistant in the hospital, professor of Chemistry, registrar, treasurer, professor of Hygiene, and dean, Dr. Craik showed himself to possess original characteristics which mark the individual from the ordinary conventional type, and he has left a deep impress of this individuality on his students, his colleagues, and his faculty. As a professor he was lucid, interesting and impressive; as an administrator his career was characterized by caution, thoroughness and energy. He brought with him to the councils of this faculty, the best traditions of the early strenuous years of McGill from his association with such able, unselfish and enthusiastic teachers as Holmes, Campbell, Sutherland and Howard.

"As the representatives of the faculty in corporation and on other executive boards of the university, the Montreal General and the Royal Victoria Hospitals, the Provincial Board of Health and the College of Physicians and Surgeons, he laboured unceasingly to promote the reputation and welfare of this faculty, and he always commanded interest and received respect and attention. Fluent and eloquent in his command of language, dramatic in his manner of expression, he elaborated argument or advanced criticism in a manner which carried his audience with him and almost compelled conviction.

"His intimate acquaintance with the requirements and working of medical charities caused his opinion to be much sought after and most valued. To no single member of the medical profession are the charities of Montreal more indebted than to the physician whose loss we deplore.

"In the death of Dr. Craik, Montreal has lost a public-spirited physician and this faculty a strenuous advocate and a counsellor of ripe judgment, and it will be long indeed before his kindly presence and his high personal qualities are forgotten by those who had the privilege of knowing him well."

At the Dundee Royal Infirmary a boy, 13 years of age, was admitted with an ugly wound in the wall of his heart, caused through the lad falling on a hay fork. Carefully following the course of the wound,

the surgeon sewed up the puncture, and the stitched heart is now reported to be doing its duty successfully.

The operation is not quite wholly without a precedent, for there have been a few cases of somewhat similar character in England within the last ten years.

In June, 1903, the Surgeons at the London Hospital accomplished an operation which became famous. They placed three stitches in the heart of John Long, who had been terribly wounded. Though at first the local doctor gave Long only half an hour to live, the operation proved successful, and Long recovered.

Twelve months later Dr. Somerville, of Leek, sewed up the wounds in the heart of a man who had stabbed himself twice with a penknife. Here, again, the patient recovered.

A few successful operations of the kind have been reported in Paris, Berlin, and St. Petersburg. In November, 1903, in Berlin, a doctor extracted a bullet from a young girl's heart.—*Exchange*.

The following gentlemen having complied with the requirements prescribed by the Quebec College of Physicians and Surgeons, have recently been licensed to practise medicine and surgery in the province of Quebec: Drs. Jos. T. E. Bousquet, Alf. J. Champagne, J. N. Perusse, A. B. Chandler, J. A. Cousineau, James C. Fyshe, Lucien Derome, R. W. Geddes, J. W. Mulligan, E. E. Robins, John J. Walker, J. A. Leduc, F. A. C. Scrimger, Raoul Leroze, Louis Verschelden, Odilon Beaudry, Zachary Lefebvre, A. Desjardins, Ariste Laurin, Arth. Denis, Henri St. George, D. Benoit, Arth. Charbonneau, T. A. Lomer, D. D. Macrae, Jos. O. Beauchamp, H. C. Church, Edgar Browning, Wm. A. Ainsley, B. Conroy, A. McG. Young, J. H. Mason, Nathan Schacher.

Miss Theresa Burla-Rigasso passed examinations for diploma in midwifery.

The Congress of the Societe Medicale de la langue Francaise de l'Amerique du Nord held at Three Rivers in June, was very successful. The opening address was made by His Honor Sir Louis Jette, while Hon. Lomer Gouin followed with another eloquent discourse. The medical congress was attended by about 225 members from all over Canada. Among those who attended the convention are three French gentlemen representing respectively the French Government, University of Paris, and the Institut Pasteur. This medical association was formed in 1902, holding their second meeting in 1904 and the congress in Three Rivers is the third. It is expected that the next meeting will take place in 1908.

Dr. Harold White, a graduate of McGill University, has been attached to the staff of house surgeons of the General Hospital, Ottawa.

Dr. A. B. Atherton, Fredericton, N.B., has been elected President of the Maritime Medical Association, meeting next year in St. John, N.B.

Dr. Fred. Richard, a graduate of McGill University, formerly of Chatham, N.B., has removed to Moncton, N.B.

Dr. Carlyle A. Porteous, Assistant Superintendent of Verdun Hospital, was married on July 11th to Miss Kathleen Constance Foster, daughter of Rev. Canon Foster. The ceremony took place at St. George's Church, Montreal. Dr. and Mrs. Porteous will reside at Verdun Hospital.

Dr. F. W. Marlowe, F.R.C.S., of 699 Spadina ave., Toronto, was married on July 10th, to Miss Florence Elizabeth Walton, of Thorold, Ont.

Dr. Alpheus A. Lovett, of Paris, Ont., was married at Burk's Falls, on July 11th, to Miss Selina Florence Bingham, daughter of the Rev. Thos. Bingham.

Dr. Albert H. Holliday, died on the 5th of July, at Traverse City, Mich. He was a native of Brooklin, Ont., and graduated in Arts from Toronto University, and in medicine from Victoria Medical College, Cobourg. Dr. Holliday practised at Belwood, Ont., till 1893, when he removed to Traverse City, where at time of his death he was president of the local Medical Association. He was in his 47th year.

Manuel Garcia, aged 102 years, the inventor of the laryngoscope, died on July 1, 1906, in London. He was born in Madrid, and adopted music as his profession, and it was in the course of his study on the production of the voice that he evolved the instrument that has had so wide a field of usefulness.

Dr. Fritz Schaudinn, whose name has lately become prominent in connection with his researches on the etiology of syphilis, is dead from septic infection at the age of 36. He held a position in the Institute of Tropical Diseases at Hamburg.

Dr. Nellie Skimin died at Toronto on July 6th, after a long illness. She was a graduate of Queens' University from which she held the degree of Master of Arts, and had practised in Toronto for some years.

Dr. G. C. Campbell, a graduate of Dalhousie University, died recently from pneumonia. He had recently practised in Halifax, and was on his wedding tour when he contracted the illness which ended fatally.

Dr. James W. Chisholm was drowned while swimming at Big Glace Bay on July 13th.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

WALTER B. CANNON, M.D., "RECENT ADVANCES IN THE PHYSIOLOGY OF THE DIGESTIVE ORGANS BEARING ON MEDICINE AND SURGERY."
American Journal of the Medical Sciences, April, 1906.

Cannon's article is interesting both from a surgical and a medical point of view. In the following brief résumé only the facts bearing on surgical practice will be considered. Of the recent advances of which he speaks many are due to his own work which is now well known, especially that bearing upon the movements of the intestines as studied by means of the X-Rays.

With regard to the stomach he first draws attention to the fact that peristalsis occurs only over the pyloric half. The stomach may be divided into two compartments, physiologically speaking; the "cardiac reservoir" and the "pyloric mill," the functions of which are well indicated by these names. "In the pyloric portion, whenever the pylorus remains closed, the peristaltic rings, moving from the middle to the end of the stomach, push the food into a blind pouch. Since the food cannot then escape through the pylorus, it has as its only outlet the opening in the advancing peristaltic rings. As the peristaltic waves recur in rhythmic succession the food is first advanced and then regurgitated over and over again before it reaches the end of the antrum. . . . It seems highly probable that the prevalence of pathological conditions in the pyloric end of the stomach rather than the cardiac end—the fact that the pyloric region is the ulcer and cancer-bearing region—is due to injuries which the greater activity of the pyloric portion may bring upon itself. . . . It is thus evident that intragastric pressure gradually increases as the pylorus is approached, until the pressure may be three to five times as great as it is in the cardiac end." These observations, the author remarks, have a direct bearing on the operation of gastroenterostomy. Studies of animals subjected to this operation have shown that the pylorus, if it remains unobstructed, is the favoured outlet for the food; and with the pylorus normal the anastomotic openings are not used, unless they are made well towards the pylorus, where the intragastric pressure is high.

Another point of surgical interest which Cannon brings forward concerns the effect of operation upon gastric peristalsis. If enterostomy

be performed within ten inches of the pylorus, it has been observed that the pyloric sphincter remains firmly closed for a period of five to six hours. During this time food is absolutely prevented from leaving the stomach, even though during the major part of it peristaltic waves continually press the food up to the pylorus. This is the more remarkable in that normally food may begin to pass from the stomach within ten minutes.

As regards the small intestine, Cannon draws attention to the late discoveries of various enzymes and anti-enzymes, the latter being especially important. The function of these is supposed to be that of protecting the body from the destructive action of its own digestive ferments, and a suggestive point in this connection is, as Weinland has pointed out, that possibly gastric and duodenal ulcers are the result of a defective production of these anti-enzymes. Cannon dwells in some detail upon the various activities taking place in the duodenum, such as reflex control of the emptying of the stomach, the conditions attached to the flow of pancreatic juice and bile, the action and interaction of the ferments of this region; and he does so "because," as he remarks "the tendency is still strong to regard the duodenum as resembling any other part of the small intestine, to be lightly set aside by operation with little consideration of the disturbances and readjustments which such a procedure entails."

He goes on to call attention to the law of peristalsis, as enunciated by Payliss and Starling some seven years ago; to wit, that the peristaltic wave is due to a local nervous reflex which produces contraction behind and relaxation in front of the point of stimulation; the effect of this mechanism is always to produce a forward movement of the food. This has a bearing upon the question of union of divided intestine. Cannon found by observation on animals, with the help of X-rays, that in end to end union no insufficiency of the gut followed, while on the other hand after lateral anastomosis there was always an accumulation of food in the chamber formed by the apposed loops. The cutting of the circular fibres in this operation destroys efficient peristalsis at the junction unless the circular muscles in both loops work in co-ordination. As they do not so act, at least for days, and probably for weeks following operation, lateral anastomosis is not so ideal an operation as end to end union.

It would seem from other operations that the nervous reflex in the wall determines that intestinal peristalsis must always be forward. Experiments on reversal of portions of the intestine by Mall and others give support to this conception of peristaltic action, for undigested waste always collects at the upper junction; nevertheless we have the well-known clinical evidence to the contrary afforded by "faecal vomiting."

and, in fact, in animals in which the intestine was obstructed, the food has been observed by Cannon moving swiftly *backward* to the stomach along the course traversed in its passage from the stomach to the region of obstruction.

In connection with the large intestine, Cannon reminds us that in the proximal part of the colon anti-peristalsis is normal. The result of this is that the caecum becomes a sort of 'churn. In this portion of the intestine absorption is great; in its faeces are still fluid or soft, while in the transverse colon they become hard. It has been proved that the ileocaecal valve will not allow ordinary faeces to pass back into the small intestine, but will allow fluids such as physiological saline to do so.

Cannon concludes his paper with certain general considerations. He gives a preliminary report of experiments which he has carried out lately, not yet published, upon the effect of etherization, cooling, drying, and handling on the movements of the stomach and intestines. Here it was found that neither the ether, nor the cooling of the viscera, nor the drying, checked to any marked degree the onward passage of the food. After handling, on the contrary, even most gently, within the peritoneal cavity or under warm salt solution, no gastric peristalsis was seen, and no food left the stomach for three hours. Fingering the stomach and intestines gently in air caused still greater retardation of the onward passage of the food, and with rougher handling in air no food passed from the stomach in four hours and then it emerged very slowly, and was moved through the small intestine with extreme sluggishness.

It has been found also that depressing emotions such as those of anger, distress, or even anxiety, not only check the movements of the stomach and intestines but also inhibit the secretion of gastric juice. Further, nothing is more remarkable than the responsiveness of the canal to conditions of general asthenia which animals exhibit when afflicted with distemper. All day long food will lie in the stomach without the slightest sign of a peristaltic wave passing over it. In asthenic states leading to such conditions the handling of the stomach and intestines can only cause an intensification of the effect of general bodily weakness and deepening of the state of inactivity.

The conclusions which surgical practice may draw from these considerations are plainly not far to seek.

E. W. A.

E. H. BRADFORD, M.D. "The Hyperæmia Treatment of Congested and Inflamed Tissues." *Boston Med. and Surg. Jour.*, June 14, 1906.

Bier claims that the true antiphlogistic state is not induced by anæmia, but, on the contrary, by increasing the amount of blood in the affected

parts. This hyperæmia can be produced by three different methods, by dry heat, by constriction and by suction. The dry heat gives us the active hyperæmia, the constriction and suction the passive hyperæmia. These three varieties of application of the hyperæmia treatment are considered as applicable to different conditions. The suction hyperæmia is especially applicable to brawny and septicly congested tissues, as is seen in cellulitis, phlegmon, etc. The constriction hyperæmia is applicable to the less virulent infections, as those of tuberculosis, and especially of benefit in blenorrhagic joints, while the active hyperæmia is more applicable to what may be termed the less active forms of inflammation, as in arthritis nodosa. The hyperæmia method of treatment in its various forms furnishes important means of increasing the flow of blood to the skin and deeper tissues. By it we can stimulate the circulation more easily than by previous methods. It has not been shown that heat acts in any other way than by stimulation of the circulation. It has been suggested that sluggishness of the lymph circulation may be overcome by suction and it is even possible that by the application of slow heat for a length of time cell activity may be promoted. In all probability these procedures will be improved upon both by mechanical devices and by combination of two or more methods. A specimen page of the various forms for suction treatment is given. The writer believes that the hyperæmia treatment is not only one which deserves assured position in the treatment of certain affections which are not readily amenable to the methods previously used.

CHARLES L. SCUDDER, M.D. "Dislocation of the Outer End of the Clavicle." *Jour. A. M. A.*, July 7, 1906.

This dislocation is not uncommon and presents varying degrees of deformity and disabling symptoms. It is produced by a blow directed from behind and above. The pathology of this dislocation consists of a rupture of the acromioclavicular ligaments in all cases, sometimes the conoid ligament is torn in incomplete dislocations, in complete cases the conoid ligament is always torn, and both the conoid and trapezoid ligaments are usually torn in complete cases. Their experiments on the cadaver were carried out by the clavicle being held in a vise and the blow directed from above and behind in all cases. In one subject there resulted a fracture of the coracoid and spinous processes of the scapula with a slight dislocation of the acromioclavicular joint. In this instance there was no rupture of the coraco-clavicular ligaments. In each of the other two experiments only a slight dislocation was effected by a blow

from above after division of the superior and inferior acromioclavicular ligaments, but when the coracoclavicular ligaments were divided the dislocation became at once very evident and complete. The writer formulates the treatment of a specific case as follows. If the dislocation is one of moderate degree, it should be treated by simple retentive apparatus. If the dislocation is extreme, in which case it is probable that the coracoclavicular ligaments are torn, a suture of the parts is indicated. If the retentive apparatus does not hold cases of the first class, then sutures should be employed. In order to secure a firmer hold on the outer end of the clavicle a suture should be placed so as to make traction on the clavicle from below in the direction of the coracoacromial ligament. The suture should be passed through the clavicle and coracoacromial ligament. The patient in the dorsal position is best as it removes the weight of the upper extremity and so assists in the healing of the parts.

E. WYLLYS ANDREWS, M.D. "A Study of Five Cases of Subcutaneous or Concealed Rupture of the Intestines Treated by Laparotomy." *Surg. Gynec. and Obst.*, June, 1906.

Two out of the five died, one on the table before operation, the other from septic peritonitis, the operation being done several days after the injury. As regards the mechanism of the injury the writer is against any bursting theory from internal pressure of the fluids or gases in the gut, and believes the bowel is cut in two by the angle or promontory of the sacrum against which it is found when the anterior abdominal wall is pushed against the spine.

External bruising is often absent. Shock and collapse may be absent early but rapidly supervene. Pain is constant and progressive tenderness is always marked in a short time. Vomiting is constant, becoming faecal, but not always a very early sign. Rigidity, rather than distension, appears early. When injury to bladder, kidney, spleen, or liver can be excluded, a patient suffering severely after a hard blow on the abdomen should be suspected of having a ruptured bowel and opened early. The rent in the bowel if large is closed by Connell's stitch, if small by either a Lembert or Czerny. He irrigates the abdominal cavity most copiously by means of a triple-nose nozzle, one being placed in the pelvis, one below the spleen, and one below the liver.

W. J. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

DUTTON (the late J. E.) and TODD, J. L. Reports of the expedition to the Congo, 1903-5. *Liverpool School of Tropical Medicine, Memoir XVIII.*

The present memoir contains a good deal of information which was given by Dr. Todd in a lecture before the Montreal Medico-Chirurgical Society in the early part of this year, which was reported in the current number of this journal. The first report deals with gland palpation in human trypanosomiasis, and is based on an examination of gland juice from 250 cases of early and advanced trypanosomiasis. The figures given show that gland puncture is by far the most efficient method of demonstrating the presence of the parasite; it is true that in advanced cases the blood, and, where pronounced mental symptoms are present, the cerebro-spinal fluid, gave a high percentage of successful examinations. The post cervical glands lend themselves best to examination, although the authors are not convinced that there is any essential difference in groups of glands.

To determine whether enlarged glands, where no obvious cause is present, really represent an infection by the trypanosome, a large number of natives were inspected, and the observers concluded that enlarged cervical glands under these circumstances, do definitely point to trypanosomiasis; and they further determined that enlarged cervical glands, without obvious cause, do not as a rule occur in districts where trypanosomiasis is absent. The practical conclusion from this is that early cases of trypanosomiasis have enlarged glands, and can generally in this way be detected.

With a view to lessening the spread of sleeping sickness, which is easily proved to follow the main tracks of trade, the members of the expedition believe that the establishment of posts of inspection on these lines of traffic is necessary, that thereby natives apparently healthy, who have enlarged cervical glands could be prevented from going into uninfected districts and could be removed to infected regions.

The concluding part of the report deals at some length with the distribution and spread of sleeping sickness in the Congo Free State, and is accompanied by maps showing graphically the presence of the disease in different districts as far as is at present known. None of the suggested predisposing causes could be proved to be actually potent. The geographical distribution of the disease at different periods, and its great

increase along routes of native travel are indicated on the maps, and show that in the author's words the disease "spreads slowly but is carried rapidly" the rivers, which form the route of travel, being generally the lines of least resistance. In the absence of census figures, they are unable to give definite figures but the terrible statement is italicised that in certain already well-infected districts "a third of the people inhabiting these districts will probably die of trypanosomiasis." In view of this devastation, no effort seems too great that will succeed in stopping the ravages of the disease: the authors are fully alive to the impossibility of any but the most relative quarantine, but they point out hopefully that even the native mind has adapted itself to the idea of segregation of the sick, and has grasped the fact that swelling of the cervical glands is the danger signal which indicates the future development of the disease.

The remainder of the memoir is devoted to several entomological studies upon new varieties of parasites found in monkeys, and upon the structure of certain biting flies.

ROBBERS. "On Pneumococcus Peritonitis," *Deutsche Med. Woch.*, 7 June, 1906.

The author points out that the first case of this condition was described by Bozzolo in 1885, and that, notwithstanding its comparative frequency it is yet not a well-known condition. He divides the cases into the circumscribed and the diffuse, of which the former is much the commoner. Robbers describes two cases, a girl of 6 and a woman of 24 which recovered. The condition is much more frequent in children than in adults, and nearly always in females. It commences with fever, vomiting, diarrhoea and headache, its onset being very sudden. The vomiting is considered due to the early irritation of the diaphragm. The author describes the appearance of the pus and the organs, but we confess that in these there does not seem to be anything clearly characteristic: the pus is generally not offensive, and the bacteriological findings are, of course, characteristic. The differential diagnosis from appendicitis is not always easy. The unilateral nature of the tenderness and rigidity and constipation favor appendicitis. Rigidity was absent in one of Robbers' cases. The diagnosis may suggest typhoid, tuberculous or the other acute forms of peritonitis.

As to the origin of this form of peritonitis the extension from the pleura is perhaps the most likely: in both these cases there was some degree of inflammation in the thoracic cavity. Yet importance must be attached to the fact that in 58 cases, 51 were in females, and certain

cases have pointed very definitely to the tubes, especially a case such as Frommel's where he found pneumococcus peritonitis after extirpation of a pyosalpinx, although the women had never had pneumonia. The search for pneumococcus in the genitalia has afforded no definite positive results. It must be granted that pneumococci may come from the air-passages and mouth to the intestine, and pneumococcus peritonitis has followed perforation. The question is then very doubtful, but the reviewers own experience has been that cases he has seen have come evidently by extension from the pleura.

The prognosis is generally speaking, good, better in children than in adolescents and Robbers believes that cases are cured spontaneously but yet he does not favour an expectant policy in treatment. Robbers advises laparotomy and drainage. The diagnosis being made from the blood or from the pus at operation the author favours the use of serum. As a foot note the author adds a third case in a woman of 31, with operation and recovery.

PROF. H. SENATOR. "On the Dietetic Treatment of Gastric Ulcer."
Deut. Med. Woch. Jan 18, 1906.

Hitherto the generally accepted method of treating gastric ulcer, particularly those with recent haemorrhage, has been by rest and careful dieting. Small quantities of food, not irritating in character is administered, or food by the mouth is withheld altogether and replaced by nutrient enemata.

Recently Leubartz has condemned this method, asserting, that the restricted diet depresses the patient, who is often anæmic, and postpones the healing of the ulcer. Leubartz recommends a diet rich in albumen in order to combine with the hydrochloric acid of the stomach which is usually present in excess. He advises eggs in increasing numbers, milk, then sugar and towards the end of the first week finely divided meat up to 70 grams daily. Even after a haemorrhage this diet up to 200 or 300 calories is allowed, together with strict rest and an ice-bag to the epigastrium, and it is asserted that under this treatment healing is more rapid and the strength regained more rapidly than with the older method.

Leubartz's method is approved by Wirsing and Mickowski, although the latter writer advises the old method of treatment for a few days after a haemorrhage.

Senator believes that the advantages of both methods can be combined by a diet which (1) does not irritate or disturb the stomach; (2) allays irritation and especially does not induce haemorrhage; (3) combines

with the excess of irritating acid usually present; (4) is easily digested and nutritious. Such a dish may be obtained by combining gluten, fat and sugar with small quantities of albumen. Senator has recommended gluten for 30 years in febrile conditions as of considerable value as a food, and especially as a means of conserving albumen. The gelatine in this preparation may also act in checking haemorrhage. The food value of fat and sugar are well known, and fat possesses the further advantage of combining with excessive acid in the stomach.

In hospital Senator orders in recent bleeding ulcers 15 to 20 up to 150 to 200 grams of pure white gelatine decoction with 50 caeosacchari citri warmed before use, of which a teaspoonful is taken every 15 or 30 minutes in urgent cases. (3) Butter and cream are given in small quantities frequently, at least 30 gr. butter and $\frac{1}{4}$ liter cream in 24 hours. If butter is not taken readily it may be given in small frozen morsels, and cream may also be frozen with or without sugar.

Naturally when no bleeding follows the diet is increased, milk, beaten eggs, and finely divided meat being used as recommended by Leubartz.

Gelatine may be administered in the forms of calves foot, isinglass &c. Salad oil may also be substituted for butter but as it sometimes induces vomiting it is best avoided at the outset of treatment. The usual medicinal agents should be employed with the above dietetic measures when indicated.

DR. SIEGFRIED TAUBER. "The Serum Treatment of Croupous Pneumonia." *Wiener Klin. Woch.* March 15, 1906.

Nine cases of pneumonia treated by Romer's serum are recorded. This serum first used in serpiginous corneal ulcers, prepared by Merck, is bactericidal and not antitoxic. The dose is 10 to 30 cc. Injected into the muscles, it produces no local symptoms.

Nine serum cases were selected out of 46 under observation.

Five cases due to Friedlander's bacillus, *B. Welchi* and *M. Catoriboles* (Pfeiffer) were quite uninfluenced by the treatments, as well as a case of tubercular pneumonia.

In the nine cases defervescence took place in 10 to 15 hours, and was noted in two cases after the first injection, in two after the second, and in one after the third.

Subjective sensations and the general condition improved almost immediately. Blood pressure in a serum case rose from 46 to 70 mm. after injection.

These observations agree with others, and in spite of the difficulty of drawing conclusions from therapeutic measures in so many sided a di-

sease as pneumonia, they are certainly encouraging and deserving of further trial.

F. C. SHATTUCK. "The Dietetic Treatment of Nephritis."

This article largely reflects and emphasizes the teaching of von Noorden.

Acute nephritis is of all grades of intensity, varying from a trivial process, the only danger of which is lest it become chronic, to one which suddenly and totally disables the kidneys.

Milk diet and copious supplies of water are in many cases likely to increase the difficulty owing to the incapacity of the glomeruli to filter off the excessive fluid. Recovery, often complete and lasting, is the rule provided a brief period of danger can be tided over. Starvation is now considered the best dietetic treatment of acute nephritis, absolute starvation for a few days in severe cases with scanty or suppressed urine and œdema of rapid onset and growth. In cases of less severity, about a quart of milk can be given daily with cereals and fats in moderate amount. The phosphoric acid which may be difficult to excrete may be precipitated by the addition of small quantities of calcium carbonate. The quantity of food is to be gauged rather by the amount of urine than by the quantity of albumen, due consideration being also paid to the general nutrition and the gastro-intestinal digestive power. Animal broths are almost the last things to be allowed, being of little nutritive value, and containing extractives which are dangerous to those liable to renal intoxication.

In acute exacerbations of chronic conditions the dietetic management is conducted on similar lines, although complete starvation may not be as safe owing to the impairment of general nutrition.

For therapeutic purposes cases of chronic nephritis may be divided into two classes—those with and those without dropsy. Where dropsy is present, especially if it is mainly cardiac, limitation of liquids, including water, is usually important. When water is excreted with difficulty increasing the blood mass merely increases the work on a heart already often overburdened. In such circumstances a relatively dry diet is advisable, and also in the contracted kidney limitation of fluid is often important to prevent undue strain being thrown on the heart and so hastening the period of defective compensation.

von Noorden's varied diet, with a fair amount of proteid is recommended, and no reason exists for using white meats in preference to red.

Green vegetables and fresh fruits are almost without exception permissible and desirable. Celery, which is forbidden by v. Noorden, is

not regarded as injurious. No reference is made to radishes, which the German author so strongly condemns.

Shattuck has no experience with the restriction of salt, but considers further clinical evidence desirable.

The writer concludes that diet is of more importance in the treatment of nephritis than drugs, and that such drugs as are useful act more on the heart than the kidneys.

In chronic forms of nephritis we seek to lengthen and lighten life. Dietetic restrictions should be, in the main, quantitative rather than qualitative. Alcohol in moderation is not necessarily a poison and may be an aid to digestion.

Excess of proteid and not proteid itself is injurious to diseased kidneys, and a varied diet rather than a monotonous one is more likely to promote general nutrition and especially to maintain that of the myocardium.

DUNGER. "On Uræmic Neuritis." *Munch Med. Wochen.*, April 17, 1906.

The author notes a case of neuritis of the left brachial plexus, which rapidly involved, especially, the median nerve: the man, 27 years old, had an acute hæmorrhagic nephritis with fever, œdema, headache, restlessness and much reduced urine: the onset of the neuritis was about 3 or 4 weeks after the onset. The accuracy of the diagnosis of neuritis was supported by the rapid onset, the severe pain and tenderness, the course, the paresis and muscular atrophy and the paræsthesia limited strictly to the distribution of the nerve-trunk. Dungen points out its relationship with the cases of neuritis in the dyscrasias, and the gouty and diabetic forms. In the region of the nerve, œdema lasted long after the œdema elsewhere had disappeared. The author thinks that so well-marked a case as this should suggest that pain in nephritis may occasionally be of this nature.

NEUHAUS. "A New Test for Santonin in Urine." *Deutsche Med. Wochen.*; No. 12. 22 March, 1906.

The test is simple, and is stated by the discoverer to be very accurate. The urine is added to Fehling's solution, which takes a dark green colour, on further addition a dark violet red appears, and if an acid, preferably acetic acid be added, an emerald green colour is found. The test is most easily produced in the urine of children, and the dark violet-red colour is the most dependable part of the reaction.

ANNAND (W. F.) and BOWEN (W. H.) "Pneumococcus Peritonitis in Children." *Lancet*, June 9, 1906.

These authors find 91 cases under 15 years of age, and their conclusions are that the disease is sometimes secondary to pneumococcus infection in lungs, pleuræ or middle ear; in the great majority of cases they think the disease comes from the bowels. Their classification and treatment coincide with those of Robbers.

RICHARD HELLER (Salzburg): "The Highest Temperature Yet Recorded." *Münch Med. Wochenschrift*. No. 23. June 5, 1906.

The patient, a student in a girl's school, where a number of scholars were ill with influenza, was seen in a febrile attack. The evening of the first day of illness the temperature rose to 44° C. During 6 days it was repeatedly observed 43½°C or higher and on 5 occasions during 2 days, 45°C (113 F.) With this there was a pulse of 110, and all possible care was taken by the use of various tested thermometers to prevent error. Recovery was complete and rapid.

J. McC.

OBSTETRICS.

UNDER THE CHARGE OF J. C. CAMERON AND D. J. EVANS.

BRODHEAD, G. L. "Treatment of Toxæmia of Pregnancy." *Amer. Jour. of Obstet.*, July, 1906.

The author believes that toxæmia of pregnancy is due to a disturbance of the nitrogenous metabolism. He reviews the work of Ewing, Stone, Edgar and Williams. The toxæmia is due to the failure of oxidizing capacity on the part of the liver. The clinical manifestations vary from mild vomiting, which should be regarded as a mild toxæmia, to acute yellow atrophy. Ewing believes that the systematic study of the urine will show that unoxidized proteid derivatives are invariably present in comparatively early stages of the severer cases. The liver changes develop first after which the kidneys are affected.

He quotes Stone as believing that eclampsia and acute yellow atrophy are the same disease. He states that we must expect to find in the toxæmia of pregnancy an excess of ammonia or amido-acid nitrogen, together with a loss of urea nitrogen. Both Ewing and Stone call attention to the unreliability of the hypobromite method as a final test for nitrogen. He quotes Williams' well known paper on pernicious vomiting of pregnancy, in which condition the ammonia co-efficient

is greatly increased, sometimes rising as high as 30 to 40 per cent, whereas 3 to 4 per cent. is normal; 10 per cent. being the danger limit. Williams believes that in the former condition the ammonia co-efficient is wonderfully elevated, while in eclampsia the ammonia co-efficient is the same.

The author is convinced that the examination of the urine for evidence of disturbed nitrogenous metabolism will enable an early diagnosis to be made. He classifies all cases of toxæmia as follows:—

1. Toxæmia with persistent vomiting.
2. Toxæmia without persistent vomiting without convulsions.
3. Toxæmia with convulsions, or eclampsia.

Treatment he divides into, (1) gynecological, (2) hygienic and dietetic, (3) medicinal, (4) obstetrical.

1. *Gynecological Treatment*:—Under this heading he considers the correction of abnormal conditions about the urogenital canal.

2. *Hygienic and Dietetic Treatment*:—The usual rest in bed, warm baths, and milk diet may be employed. He mentions as being useful peptonized milk, clear coffee, chicken, oyster and clam broths, beef juice, liquid peptonoids, and panopepton. Rectal irrigation with saline solution every six hours followed an hour later by a nutritive enema of 4-6 oz. may be employed in severe cases with benefit. He gives as a useful formula the following: the whites of two eggs; whiskey or brandy oz. 1; a pinch of salt and peptonized milk to make oz. 6.

3. *Medicinal Treatment*:—Morphin should be reserved for severe cases, if used at all. Calomel is recommended as being useful, followed by the use of sulphate of magnesia. The use of alkalies on theoretical grounds may be recommended.

4. *Obstetric Treatment*:—He divides obstetric treatment into (1) dilatation of the cervix, and (2) emptying the uterus. He mentions that mere dilatation of the cervix sometimes relieves these cases of vomiting. If interference is to be followed by good results, it must be done early. As indications he considers that where acetone and diacetic acid are present, and constantly increasing in amount, or where the ammonia co-efficient is high, the operation is demanded in order to save the patient's life.

He then discusses the toxæmia of pregnancy without persistent vomiting and without convulsions. The symptoms being chiefly those of a high grade toxæmia. Pain and tenderness in the epigastric or right hypochondriac region are marked symptoms.

Nitrogenous food must be reduced to a minimum. Milk diet is recommended. Pot. bitart. oz. ii to a quart has given excellent results. He also employs soda bicarb. gr. 10 four times daily. The bowels

are to be kept well open. He speaks well of colon irrigation with large quantities of saline solution. Intravenous saline infusion may occasionally be employed in suitable cases. He would reserve venesection for plethoric cases with scanty urine secretion where convulsions seem imminent. Where treatment fails to relieve the condition labour should be induced. He prefers hydrostatic dilating bags to the use of bougies, for the induction of labour.

The author then discusses the treatment of toxæmia with convulsions or eclampsia, quoting very fully from authorities, chiefly American, as to the use of chloral, veratum viride, and morphia, but nothing new has been added to our knowledge of this contribution. He believes that Bossi's dilator is a dangerous instrument. He sums up his treatment of eclampsia as follows: During the eclamptic seizure administer chloroform and oxygen if possible. Prevent the patient from biting her tongue, and from injuring herself from blows or falls. If the pulse is full and strong with tension, give the Squibb fluid extract of veratrum viride, minims x-xx, hypodermically, and repeat in doses of v every half hour until the pulse is reduced to 60. If the Norwood's tincture is used, give minims x-xx and repeat in doses of x every half hour until the pulse is reduced to 60. In cases of collapse, use whiskey, morphine and atropine hypodermically. If the pulse is weak and feeble, rely chiefly on chloral and bromides by rectum in doses of a half to one drachm of each. Where the pulse is strong, use veratrum as indicated, combined with chloral by rectum.

If the patient is unconscious, move the bowels by croton oil, minims 1 to 2, given with olive oil, one drachm, on the back of the tongue. If this is not efficient, give a high enema of sulphate of magnesia and castor oil, of each one ounce. If the patient is conscious, give mag. sulph., two drachms, every fifteen minutes until one ounce has been given. Then, if necessary, use the high enema of mag. sulph. and castor oil. A hot pack should then, be given the colon should be irrigated with several gallons of saline solution and several quarts left to be absorbed. Intravenous infusion should be reserved for the very severe cases. Venesection, when labor has not yet begun, may be used to advantage in robust patients with a full pulse, 12-16 ounces of blood being removed. If, however, the patient is about to be delivered, a moderate loss of blood can be allowed in the third stage, and, if necessary, venesection can be performed after delivery. To decrease arterial tension, and as heart stimulant, diuretic and diaphoretic, nitroglycerine is also of great value, while caffeine and strophanthus are second only to nitroglycerin.

Obstetrical:—If labour has not commenced, a modified Champetier de Ribes' bag should be introduced, and the cervix should be softened and dilated by the use of these bags. When the cervix has been well dilated, complete dilation by the hand, and deliver by forceps or version.

If the cervix cannot be dilated by ordinary methods, Dührssen's incisions or Cesarean section should be advised, but, unless the operator feels perfectly able to perform these operations, it would be better, we believe, to rely on medical treatment alone.

If labour has already begun, but the cervix is long and rigid, use the bags for softening and dilatation. If the cervix is soft and dilatable, complete dilation manually and deliver by forceps or version.

The one fact above all to be kept in mind at all times, is, that in elimination lies the hope of the patient's salvation.

D. J. E.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The sixteenth regular meeting of the Society was held Friday evening, May 18th, Dr. F. R. England, President, in the Chair.

The paper of the evening was read by Dr. Royal Whitman, of the Medical Department of Columbia University, New York, the subject being "Remarks on the Weak Foot, Commonly Known as Flat Foot; with Especial Reference to the Principles of Curative Treatment."

This paper was discussed by Drs. Gilday, Bell, Sir William Hingston, Mills, and others. There were 92 members present.

The seventeenth regular meeting of the society was held Friday evening, June 1st, Dr. F. R. England, President, in the Chair.

SPINTHARISCOPE.

J. W. STIRLING, M.B., demonstrated this instrument, which is a modification by Gotch of an apparatus brought out by Crooks to demonstrate the radiations of radium. The instrument is of marked diagnostic value in the appreciation of light from the human eye. The results of the old test, namely, the standard candle, were always more or less haphazard, for, as is easily understood, any candle varies from time to time. The instrument consists essentially of a small particle of radium attached to a small rod in the interior of the tube. Behind it there is a small screen covered with zinc sulphide. At the other

end of the tube is a convex lens with a screw by means of which you can alter the focus. In the back is another small rod which one can slide up and down which leads to the particle of radium. A scale of figures runs up both rods, by means of which one can gauge the patient's ability of perception of light.

DR. F. R. ENGLAND presented a case for diagnosis, which was discussed by Drs. Brown, Laphorn Smith, and Gordon.

UTERINE FIBROID.

WM. GARDNER, M.D.—Modern surgical technique has made the operation for the removal of uterine fibroids so successful that opportunities for the exhibition of specimens are quite common. The exceptional character of this specimen, however, makes it of unusual interest. The patient, a single woman, aged 41, whose menstruation had been regular and painless, with moderate flow, lasting three days, complained of pain of colicky character referred chiefly to the right lower quadrant of the abdomen. She first noticed a lump last May, but within the last two or three months it has rapidly increased and become somewhat painful. Examination showed the abdomen to be irregularly enlarged, the principal area presenting anteriorly an elastic feel, giving rise to a faint suspicion of fluid. Operation showed a multinodular fibroid of the uterus weighing nine and a half pounds. The main mass was attached to the right border and cornu of the uterus. This it was that presented the elastic feel referred to. Obviously there had been torsion of the mass, and the pedicular attachment being thick and firm, the uterus itself and its blood vessels must have been in the condition of torsion. This condition of interference with normal circulation was doubtless the cause of the rapid increase of size and peculiar condition which existed.

On making an incision into the main mass, the knife entered a large thick-walled rough cavity filled with a thick brownish black fluid. The exceptional features of the case are the rapid growth as opposed to the ordinary slow development of fibroids, and the exceptional intensity of the pain. The rapid growth, however, quite corresponds with the history of so-called cystic fibroid.

W. GARDNER, M.D.—With reference to the rate of growth of these tumours it is true that in a proportion of cases after menopause the tumour undergoes a process of senile atrophy with the organ from which they grow. But there are many exceptions. The last tumour of this kind I had to deal with was in a patient who had ceased to menstruate for several years, when the tumour grew rapidly, and oper-

ation had to be done. Until not very long ago such patients were encouraged to bear their ills with the hope that menopause would bring relief. I am quite in accord with Dr. Smith in the opinion that in almost all cases uterine fibroids should be removed early while the patient is in good condition and before degenerative processes have set in. These degenerative processes are much more common than is usually supposed.

Dr. McCRAE showed a specimen of Lithopædion.

W. GARDNER.—The chief interest in this specimen is that in some cases natural processes, unaided by operation, can dispose of the condition. It is well known that in the very early cases of ruptured tubal pregnancy and tubal abortion the peritoneum can dispose of the ovum and whatever of blood may have been exuded, when the quantity is small, these patients having only a moderate degree of pelvic symptoms for a time.

Dr. Lockhart showed the society some time ago a specimen of lithopædion he had removed by operation. This specimen was of especial interest to myself. In this patient, over twenty years ago, Dr. D. F. Gurd and I diagnosed extra-uterine pregnancy and we treated her with strong faradic electric currents, a method of treatment which at that time had a certain amount of vogue. Lawson Tait, that great pioneer in gynæcological and other surgical operations had just begun to exploit his brilliant operation for extra-uterine pregnancy, but it was not yet universally accepted. Our patient got comparatively well for a time, but a mass persisted in the pelvis and she was subject to paroxysms of pain.

The eighteenth regular meeting of the society was held Friday evening, June 15th, Dr. F. R. England, President, in the Chair.

The officers for the ensuing year were elected as follows: President, Dr. F. G. Finley; Vice-President, Dr. Wesley Mills; Secretary, Dr. A. H. Gordon; Treasurer, Dr. A. T. Bazin; Trustees, Dr. J. M. Jack, Dr. H. S. Birkett and Dr. James Bell.

The address of the evening was delivered by Baron Takaki, the Medical Director of the Japanese Navy.

BERI-BERI.

BARON TAKAKI took up the subject of Beri-Beri and his connexion with its extermination in the Japanese Navy. In Japan the disease is called Kak'ke, which means "leg trouble." It has been known there for many centuries, at least more than twenty, and during the last three hundred years has been most prevalent in the chief cities of the

country and also the old towns. The disease is also found in Formosa, Corea, the southern part of China, Borneo and the Philippine Islands, slightly in India and also in some parts of Brazil and South America. Europeans have also contracted the disease and isolated cases may be found in seaport towns, as Liverpool, etc. There are three forms, the acute, subacute and chronic, the latter being rare. In ascertaining the cause of the disease in connexion with the navy, the Baron followed out many investigations and experiments and at last came to the conclusion that the food supplied to the men had much to do in rendering them susceptible to the disease. These experiments were extremely interesting. Taking the men at different stations the proportion of nitrogenous food to the carbo-hydrates was graded and the results carefully noted, the proportion being from 1 to 17, to 1 to 32. It was noted that in this latter proportion the occurrence of cases of beri-beri was small, and as the scale was lessened the cases were greater. Previous to this experiment investigations had been made with regard to the cabins of the men, the clothing, their occupation, the temperature or climate, rain-fall, etc., but with no result whatever as to the prevalence of the condition. The trouble now was to convince those interested that the diet was at fault. An opportunity presented itself when a detachment of soldiers was sent to the northern part of the island, on the Russian frontier, and, after considerable trouble, the Baron was permitted to instruct the doctor of the regiment in his method of diet. He failed, however, to carry out those instructions and 16 men were lost out of 160. Later, the right proportion of barley and rice was sent to them and no more cases developed, those already ill rapidly recovering from the disease. The doctor in charge of this detachment then set about himself to contract the disease and, after a diet of boiled rice with a small quantity of table salt for seven days, typical symptoms set in, and at the end of a fortnight he was very ill; he recovered slowly. On board ship it was easier to keep track of the disease as no outside conditions interfered. In one instance, where the ship had been cruising some 280 days, there was serious doubt that the ship would ever reach port, so many of those on board were down with the disease. As soon as she arrived and the men could now get bread, fresh meat, eggs, etc., improvement of the men set in next day, no new cases developed and all recovered in four weeks. On another vessel, taking the same route but supplied with a more mixed diet, no cases developed.

After much trouble a new diet was instituted in the navy, and from that time the number of cases decreased until the disease was completely exterminated. The men increased in body weight, the sick rate de-

creased and climatic conditions of cold and heat did not affect the men as formerly. The improved condition of the men was manifest in the successes of our war with China, and later in the Boxer trouble, and lastly in the war with Russia, when more than 30,000 men kept their health excellently and showed a sick list much less than in time of peace.

Medical science can do much for the advancement of a country. Had the Japanese navy remained as it was twenty-six years ago, it could not have withstood the wars it has passed through and would have been beaten by disease and not by the enemy.

Japanese medical education is, generally speaking, of the German school, and all medical students are taught the German language as an extra subject, and nearly all our post-graduates go to Germany. As, however, our relations with English countries are most useful to us all our youth (that is, those in the high schools) are taught the English language, and during the last three years in one medical school the English language is taught as an extra-subject. With a better command of English we will be in a position to inform our English *confrères* of our work in Japan, and will be better able to understand that done in English countries.

A vote of thanks was proposed by Professor Girdwood, seconded by Dr. Shepherd, and passed to Baron Takaki for his kindness in addressing the society.

FRAGMENTS OF RUBBER CATHETER IMBEDDED IN PROSTATE.

JAMES BELL, M.D.—The patient from whom this body was taken was a man aged 72, who came to hospital on May 5th, suffering from retention of urine since May 3rd. He first suffered from retention eleven years previously, and again once or twice since. About three years ago he had an exceptionally bad attack, and a catheter was passed with some difficulty and bleeding. When he came to hospital the bladder extended up to the umbilicus; it was emptied by a rubber catheter, except on one occasion when a silver tube was used and nothing was felt. On the 14th of May a suprapubic prostatectomy was done, when in the right half was found this piece of old rubber catheter imbedded deeply in the substance of the prostate. The prostate weighed 150 grs. The patient did well. This piece of rubber catheter must have been left behind three years previously. There had been some bleeding during the attacks of retention and while in hospital there was a lot of blood in the bladder with large clots. The patient was also toxic.

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THE DOMINANCE OF THE NUCLEUS.

BY

J. GEORGE ADAMI, M.A., M.D., F.R.S.

I take it that in opening this discussion I shall perform the greater service if I devote myself to a rapid review of the various findings which together compel the conclusion that the nucleus is the centre of cell activity, leaving it to those who follow me to enter more particularly into the evidence of one or other order.

Such a general survey is more especially demanded because, to my knowledge, it has not yet been attempted; or, more correctly, when attempted, what I regard as the inevitable conclusions have not been drawn. While individual workers have demonstrated the controlling powers of the nucleus in one or other respect there has been a curious disinclination to bring the various orders of data together and deduce their full significance. But here, as regards this morning's discussion, certain limitations must be introduced; the activities of living matter are to be divided into two categories, intrinsic and extrinsic, or vegetative and functional. The observations which have been made upon the nucleus in connection with vegetative activities, with cell multiplication and reproduction, are very abundant. To discuss these along with the data bearing upon the role of the nucleus in the functional activities of the cell would make this morning's debate altogether too diffuse. It has been thought wiser, therefore, to confine ourselves, save in one respect, in the main to the latter—the functional activities. Nevertheless, if I have correctly interpreted my duties as introducing the subject, in order to place in a clear light the controlling influence of the nucleus in the life of the cell, I cannot leave these vegetative activities out of account. As opener, I must as briefly as is possible, consistent with lucidity, bring forward the evidence of nuclear pre-dominance as afforded by studies upon cell and individual reproduction. It was the studies upon mitosis that first revealed the high importance of this constituent of the cell.

We can, perhaps, best treat this section of the subject by means of a series of theses:

1. The properties which distinguish the individual of any race or family from the individual of any other race or family are to be traced back to the constitution of a single cell, the fertilized ovum, from which that individual has been developed.

2. There must, therefore, be something in the constitution of the germ matter of the parent stock which differentiates it from the germ matter of other stocks. Nay, more, no two individuals appear to possess germ matter of absolutely identical constitution.

3. In individuals of gamogenetic origin, resulting from sexual union, the material contributed to the ovum by the paternal spermatozoon and the maternal ovum is, physiologically speaking, of equal value. As demonstrated by Mendel in his observations upon hybrids, like orders of offspring result whether the male cells of stock A be employed to fertilize the ova of stock B, or the female cells of stock A be fertilized by the male cells of stock B.*

It is evident, therefore, that matter of like order is contributed to the fertilized ovum by the two parents.

4. In studying more narrowly the process of fertilization we find that the only matter contributed correspondingly by both parents is nuclear matter. Ovum and spermatozoon are cells of widely different appearance, and the result of fertilization is that the female cell affords the cytoplasm, or cell substance, of the fertilized ovum: the male cell provides the centrosome. The nucleus of the fertilized ovum or new individual is formed of corresponding amounts of nuclear matter (chromatin) from both parents.

5. Not only is this the case, but, most significantly—I shall take up a probable exception immediately—each supplies a like number of chromatin loops or chromosomes, and, as the fertilized ovum undergoes development and proceeds to divide and redivide, the like process of distribution is continued, so that each separate body cell of the fully developed organism contains equivalent parts of chromatin of paternal and maternal origin.

6. We can proceed yet further and recognize that in certain species, at least, the chromosomes supplied by or derived from either parent, while pairing with like chromosomes from the other parent, are not all identical in appearance and size, but vary among themselves, the variation being constant; that is to say, the same types of chromosomes

* In mammals intrauterine existence would seem to introduce a factor of differentiation. From their mother's womb male and female show constant differences.

are found in successive generations of cells. This peculiar variation, as has been pointed out more particularly by American observers (Montgomery and Sutton) is frequent in insects in the cells which ultimately give rise to the germ cells. As Moore and Arnold, of Liverpool, have just shown, a like constancy is to be made out in the types of chromosomes seen in the spermatocytes of mammals, even of man himself. The constancy of the varieties in individual species suggests that the chromosomes of different orders possess different properties and determine different characters or sets of characters in the cells to which they are distributed and in the individual formed from the aggregation of these cells. In support of this hypothesis are the remarkable observations first of McKlung, of Kansas, and later of E. B. Wilson, of New York, that the spermatozoa of sundry insects are of two orders, though there is but one type of egg. The one order of spermatozoon gives rise to males, the other to females, the difference between the two being in their chromosomes. In the maturing spermatocytes which give origin to the spermatozoa, either the one set of cells possess an accessory chromosome, or, in other cases, a particular chromosome in one half of the maturing spermatozoon is large, in the other half is minute. To quote McKlung, "A careful consideration will suggest that nothing but sexual characters thus divides the members of one species into two well defined groups, and we are logically forced to the conclusion that the peculiar chromosome has some bearing on the arrangement."

Here we are not discussing sex, and I do but note these recent observations in passing. There are other cases, not as yet fully worked out, in which, as in the Aphides, there would appear to be one type of spermatozoon and two types of ova.

The natural conclusion to be reached from all these data is that *the nuclear matter conveys and determines, or controls, the inherited peculiarities of the individual; further, the conveyance is through matter contained in the chromatin loops or chromosomes, while it may be that these individual loops, varying among themselves, determine particular conditions.*

What we know concerning the spermatozoon points very definitely to the conclusion that the *groups of chromosomes* distributed to the spermatozoa derived from a single spermatocyte are not identical, each spermatozoon receiving only one-half the number of chromosomes proper to the primordial germ cell, and to the cells in general of any particular species. The ovum on its part exhibits a like reduction. To enquire further into this remarkable reduction process would lead us

into the discussion of variation and the Mendelian doctrine. I do but mention these matters here to call attention to the fact that not merely inheritance but variation is seen to be most intimately associated with the nuclear material, and that, if we can trust our eyes, the one morphological constituent involved in and responsible for all cases of inherited peculiarities and gamogenetic variation is included in the nuclear chromatin. That the other constituents of the cell have an influence or can have an influence we do not deny. If in the fertilized ovum the nucleus influences the cytoplasm, so conversely the constitution of the cytoplasm must tell upon the nucleoplasm. The facts in our possession indicate that the latter is the subordinate process: the influence of the nucleus is dominant. This is best indicated by Boveri's remarkable observation that if the nucleus be removed from the sea urchin's egg and the enucleated mass of cytoplasm be fertilized by the spermatozoon of another species of echinoderm the resultant larva is of the type of the species that afforded the spermatozoon, that is the nuclear material: this has conveyed and determined the specific properties of the individual.

Now, if this be so, it must follow that the nuclear matter controls all the essential cell activities, and this because, studied narrowly, it is seen that the morphological properties of a cell are the expression of the constitution of the cell; it is the constitution that determines the properties and functions of that cell. All are bound together every whit as much as are the properties of any given salt and the constitution of the same. What is true of the cell holds also of the multicellular individual; the specific properties of the individual are the summation of the properties of its component cells. If, therefore, nuclear composition dominates the morphology of the individual cell it dominates likewise the properties of the individual.

It must now be asked, what evidence do we possess establishing that this is really the case? That evidence may be dealt with under many heads. We have to deal with the evidence afforded by:

(1) The natural and experimental enucleation of cells. (2) Gross changes observed in the nucleus as the result of cell activities. (3) The finer changes in the same which may be seen to follow functional activity. (4) The histological changes in the nucleus associated with morbid conditions. (5) The chemistry of nuclear and cytoplasmic matter respectively, and (6) The ferment actions of the cell and their relationship to nuclear activity.

I believe that we have the good fortune to see here to-day those who have conducted investigations along each of these lines. Let me now

lay before you the main data that have been gained under each of these headings and the conclusions that may reasonably be deduced.

(1) *The Effects of Removal of the Nucleus.*

The cell which, like the erythrocyte, undergoes natural loss of its nucleus may continue to exist for a considerable period, and, during that time actively perform function. The mammalian red corpuscle for example, according to W. Hunter, Quincke, and others, exists from fifteen to thirty days. While it exists we see no evidence of growth, and certainly it never propagates itself. The same holds good for cells artificially deprived of their nuclei; they do not necessarily undergo immediate disorganization; they can be the seat of certain metabolic activities. According to Klebs, the enucleated cells of the alga, *Spirogyra*, can in the sunlight produce new starch granules; can, that is, synthesize starch from the carbon, oxygen and water absorbed, the starch thus formed in the sunlight being used up in the dark; and this may continue for as long as six weeks. They may further continue to exhibit motion in response to external stimuli (*Lacrymaria olor*, Verworn); they may actively ingest food particles. But, on the other hand, the testimony is unanimous that higher metabolic activities are incomplete. Unlike nucleated portions of a vegetable cell, the enucleated is unable to develop a cell wall of cellulose. Among protozoa also Verworn has noted that enucleated pieces of *Foraminifera* show not the slightest capacity to form the internal calcareous skeleton. If the enucleated cytoplasm of *Thalassicola pelagica* ingest foreign particles, it is unable to digest them wholly, and while the enucleated cytoplasm can develop a new centrosome (E. B. Wilson) it cannot give rise to new nuclear material. It may be laid down that if it can form new paraplastic substances, like starch, it cannot form new cytoplasm and cell substance proper: that is to say, it cannot increase in bulk and undergo cell division and multiplication: or, otherwise, *these observations conclusively prove that the nucleus is essential, not merely for the vegetative activities, but also for the higher metabolic activities of the cell and their due co-ordination.*

That the nucleus alone deprived of surrounding cell substance cannot regenerate the cell is another matter. It has freely to be admitted with Verworn, Boveri, and Lillie, that there must be a certain minimal quantity of cytoplasm associated with the nucleus before regeneration can take place. But what this proves is not that the nucleus is not the dominating portion of the cell complex, but only that the association of nucleus and cytoplasm is essential for full cell activity. By the lack

of perception of this distinction it may be noted that Verworn's treatment of the whole subject of cell processes is greatly weakened, if not vitiated. His facts prove that nucleus and cytoplasm are equally essential for the full function of the cell, not that they are of equal value. We may as well argue that in the community of bees the individual drone or worker is of importance equal to the Queen, because we find that the Queen-bee, if separated from the rest of the community, is incapable of obtaining food for herself and so starves to death. I shall refer later to what I regard as the right conception of the relationship between cytoplasm and nucleus.

(2) *Gross Changes in the Nucleus during Activity.*

Among these may be noted, (1) alteration in the position of the nucleus in cases in which there are indications of localized as distinct from diffuse cell activities, and (2) alteration in size and shape of the nucleus accompanying active function.

In the animal organism possessing cells with a body which is small in proportion to the size of the nucleus, examples of the first order would appear to be rare, though they are not entirely wanting. Thus Korschelt has shown that in the egg rays of the water scorpion (*Nepa*) with their cells having remarkable branching nuclei; long branches from two adjoining cells send out processes which come into close proximity. In the space between these a chitinous deposit gradually shows itself, and when the mass of chitin is fully formed the processes are withdrawn. In the plant, movement of the nucleus towards the area of new formation in the cell is relatively common: thus when there is the active formation of a thick cell membrane along one aspect of the cell it has been noted that the nucleus becomes eccentric and approximated to the region of new development. There is a similar eccentric localization of the nucleus during the development of root hairs (*Haberlandt*). I need but mention instances of the second, viz.: of alteration in size—they are now so well known. The earliest observations were those of Heidenhain years ago upon the different appearance of the nuclei of salivary glands when at rest and after stimulation. In more recent years we have had the striking observations of Hodge, confirmed by Gustav Mann, Lugaro and others, upon the nuclear alterations in the motor ganglion cells of bees, birds, cats and other vertebrates, brought about by natural and experimentally produced fatigue.

These observations also clearly demonstrate that *the nucleus is not merely the vegetative centre of the cell, but is involved in its functional activities.*

(3) *Finer Changes Occurring in the Nucleus During the Course of Cell Activities.*

If I am not mistaken it was a native of what we regard as the youngest of the civilized great countries of the world—Professor Ogata—who first, in 1883, clearly recognized the finer nuclear changes associated with secretory activity. He called attention to the granules or plasmosomes appearing in the nucleus at the beginning of secretory activity, granules which take on the characters of nucleoli and pass from the nucleus into the cell body. In these he held that the zymogen granules are developed, which eventually become (part of) the protoplasm of the cell. In 1887 Lukjanow made confirmatory observations. He noted in the secreting cell outside the nucleus an agglomeration of little spherules which in form, size and reaction to dyes, were closely related to certain nuclear bodies (Kernkoerperchen). He drew the cautious conclusion that "it appears in any case that the hypothesis of a connection between the nucleus and the cell body has in itself nothing improbable, a connection shown outwardly by certain structural elements of the nucleus passing over into the cell body and there undergoing further change." In the following year F. Hermann noted the apparent discharge of similar minute globules in mucous goblet cells during secretion, and also called attention to the fact that these in staining powers resemble the nucleolus. These he found were absent from the resting cell. In 1890 Professor Macallum made his first report upon similar phenomena. He pointed out that in the nuclei of developing ova of *Necturus* (the Lake Lizard, found here in Lake Ontario), as also in that of the frog, at one stage the chromatin is principally collected in the form of nucleoli at the periphery immediately beneath the nuclear membrane. These nucleoli are usually spherical and vary somewhat in size. At this stage yolk granules are absent from the cell. With an indigo carmine dye he found that the nucleus and cell body stained red, whereas the nuclear bodies took on a deep blue. At what appeared to be clearly a later stage yolk spherules made their appearance, and when this happened the whole ovum stained blue, the nucleoli being diminished in size. What appeared to be an intermediate stage was seen in ova in which the nucleoli and the cell substance in their immediate neighbourhood exhibited a blue stain, while the rest of the nucleus and the main mass of the cytoplasm still stained red. It was difficult from these observations to arrive at any other conclusion than that the nuclear matter becomes differentiated into nucleolar, and that this diffuses gradually through the nucleus and then into the cell substance, the diffusion

coinciding in point of time with the formation of the yolk granules. Macallum thus regarded the yolk granules as formed by the union of a derivative of the nuclear chromatin with a constituent of the cell protoplasm. And we here note that these yolk granules chemically are composed in the main of lipoid material, of lecithin, a compound to which I shall refer later. In the pancreatic cells Macallum found—and Steinhaus has made similar observations—that the nuclei possess safranophilous nucleoli, while the rest of the nucleus with double staining takes on a deeper red colour of hæmatoxylin. As the nucleus loses its safranophilous substance the cell protoplasm acquires safranophilous granules. He concluded that the chromatin of the nucleus gives rise to a substance prozymogen; sometimes it is dissolved in the nuclear substance, sometimes collected in masses (plasmosomes); finally it diffuses out into the cell protoplasm, there meeting with a constituent of the latter to form the zymogen proper.

I might proceed to detail a long series of confirmatory observations by Carlier, by Bensley—made here in Toronto—by Maximow, Solger, Nicholas, E. Muller, Krause, Galeotti, Vigier, Garnier, Greenough and others, all agreeing—save in minor details—and all bearing upon the processes seen in gland cells. All describe the youngest, smallest, most deeply situated granules as situated in the immediate neighbourhood of the nucleus; describe these as identical in character with the plasmosomes or nucleoli seen without the nuclear membrane, and have observed that as they pass to a further distance from the nucleus they enlarge into definite secretory granules. It is with the exact stages of this process that there has been and still is some debate: whether they project as buds from the nuclear membrane or make their way out from pores opening into the same; whether they finally dissolve within the cell or undergo solution when discharged into the external medium. But Professors Macallum, Carlier and Bensley are all here, and I must not further steal their fire. I would only add that what has been determined in the animal cell holds for the plant cell also. Thus Torrey has described a succession of changes in connection with the nucleus and cell body in the germinating maize seed associated with the production of diastase. The processes are of an identical nature: deep staining granules are first seen in the nuclei whence these exude in small streams into the cytoplasm: scattered at first through the cell these later become collected at that end next to the endosperm where they become ultimately dissolved. It is following upon their dissociation that the first action of a ferment upon the cell wall and matrix of the endosperm becomes evident.

Nor is it only in connection with secretions possessing ferment action that we have evidence of nuclear function. In plants Schniewind Thies has observed nuclear changes in the nectar cells of flowers in connection with the elaboration of nectar. In animals, the curious vacuoles in the nuclei of fat cells which have been known for several years have more recently been shown by Shattock to contain and to give the reaction for fat.

These data almost justify us in accepting Claude Bernard's remarkable prevision of more than a quarter of a century ago that the cell substance is the seat of vital expenditure—while in the nucleus resides the power of organic synthesis. This does not, however, in our opinion, exactly represent the relationship, for the nucleus is also the seat of expenditure, nay, appears often to determine that expenditure. But clearly the indications are that the higher syntheses, those associated with growth and those governing the specific enzyme actions of the different forms of cell, are determined and initiated by the nuclear matter.

(4) *The Nucleus in Pathological Conditions of the Organism.*

Purposely when passing in review vegetative and proliferative phenomena I did not call attention to the evidence afforded by the study of the nucleus in cases of aberrant cell growth. It appeared advisable to consider the pathology of the nucleus by itself and from all aspects; and that more particularly because while the normal vegetative activities are not subjects for discussion this morning, there are those here present who, from their studies upon tumours, are prepared to speak upon the abnormal. At this point we have to call attention to the evidence of nuclear dominance afforded, (1) by cases of abnormal cell growth, (2) by cases of disturbed function.

Regarding the first of these I shall be brief.

It may be stated unhesitatingly that the majority of pathologists at the present moment regard neoplasia or blastomatosiis as essentially a condition of aberrant cell growth, brought about not by the constant stimulus of intracellular parasitism, but by some primary alteration of cell environment. As a consequence of such alteration, if I may quote myself, the energies which, had the cells remained in their normal relation, would have been devoted to functional activities, become diverted to vegetative and proliferative. Your active malignant tumour cell has characteristically all the attributes of a vegetative cell, or, as it is usual, perhaps unfortunately, to express it, is of the embryonic type. Associated with this we find that the growing tumour exhibits abundant

mitoses, and what is more, the growth being aberrant, we find a well pronounced tendency for the mitoses also to be irregular. We thus encounter a great variety of changes, (1) dispersion of chromosomes in the cell body as the result apparently of rupture of the threads of the achromatic spindle. (2) asymmetrical mitoses, (3) multipolar mitoses, (4) hypochromatosis with diminution either in the number or in the size of the chromosomes. (5) hyperchromatosis with increase whether in number or size of the chromosomes. (6) Associated with degenerative changes and rapidly growing tumours we may encounter the development of paranuclear bodies (*Nebenkerne*), sometimes of large size and modified staining properties, lying in the cytoplasm and clearly derived from the nuclear matter.

The existence of these abnormal nuclear conditions in connection with tumour growth is most significant. Beyond this statement, that it is difficult to arrive at any other conclusion than that there is an intimate relationship between these nuclear vagaries and the abnormal cell growth seen in malignant tumours, I feel it is unsafe to venture; for, as Dr. Bashford, who is here with us, has frankly acknowledged, more advanced hypotheses based upon these abnormalities have not stood the test of extended investigation.

Turning now to observations upon the nucleus in pathological conditions other than those associated with aberrant growth it may, in the first place, be noted that cases may be recalled bearing upon the cell when it passes into a latent or dormant condition. While we cannot go as far as Grawitz and accept the existence of "slumber cells," in which the nucleus and its chromatin have become so shrunken as to be invisible, we can, I think, note that with the arrest of cell function and passage into an inert state, the nuclei undergo shrinkage, becoming extremely small and attenuated, as in the fully formed connective tissue, fully formed fat cells, etc.

It is in connection with cell irritation and the commoner acute degenerations that the nuclear changes become most evident. It is a matter of familiar knowledge that pronounced changes take place in connection with cloudy swelling and, to employ the old term, fatty degeneration, as distinct from fatty infiltration of the cell. In cloudy swelling, which so commonly accompanies the acute fevers and conditions of intoxication, we note, more particularly in the cells of secretory glands, that the nuclei, which in the first stage of irritation may become more intensely stained, rapidly lose their staining property and become indistinct, and the cell body becomes filled with granules of albuminous nature. Stolnkow was apparently the first to make accurate studies upon the changes that occur in these degenerative processes;

many others have since noted the same collection of the chromatin in the region of the nuclear membrane, the discharge into the cytoplasm (well seen in phosphorus poisoning), have described these little masses as first staining like nuclear substances, and later losing the nuclear stain completely, the cell body becoming filled with shell-like clear staining globules. The more recent work of Schmaus and Albrecht, Lubarsch and others has confirmed and extended these observations, the former observers calling particular attention to the formation of nuclear buds, as also to the hyperchromatosis and karyorrhexis in gradual death of the cells of various organs. There are, needless to say, other changes seen in the degenerating cell—Pyknosis, or contraction and clumping of the nucleus and nuclear material—Karyolysis, or complete disappearance of the chromatin; these are evidently post-mortem conditions (i.e., in the cell), and need not here be considered. From those first mentioned it would seem that the cell may recover. They represent exaggerated conditions of normal processes, but where the latter stages show themselves regeneration of the cell becomes hopeless.

As to the significance of this discharge of nuclear material I shall have a little to say after we have discussed the chemistry of the nucleus. Professor Ewing is here, and he and others will, I trust, discuss the relationship of these modified nuclear discharges to the intracellular appearances which have by many been regarded as cancer and vaccine or variolous organisms.

(5) *The Chemistry of Nuclear and Cytoplasmic Matter Respectively.*

Here in studying the chemical composition of the two components of the cell we meet with certain remarkable facts, for not a few of which we are indebted to our colleague, Professor Macallum. There are certain substances of great chemical activity bound up in the nuclei which are present to but slight extent, if, indeed, at times they can be recognized in the cell body. Notably is this the case with phosphorus (Lilienfeld and Monti, Macallum) as also with "masked" iron—iron, that is, in fairly firm combination so that it is only loosened and made to respond to the tests for free iron after having been subjected to preliminary dissociative treatment. On the other hand, certain substances found to be present in the cell body are absent from nuclear matter; among these, as Macallum has pointed out, is potassium. When now we come to study the proteid contents of the nuclei we find that these, unlike ordinary proteids of the cell body, are undigested by gastric juice, and that the undigested material consists of the nuclear network and its chromatin and the nucleoli. We owe especially to Kossel's investigations the explanation of these peculiar features. Cell

nuclei, that is, contain as a main constituent, a special group of proteids—the nucleoproteids. These nucleoproteids split up into albumen (histon) and nucleins, and it is these nucleins in particular that resist the action of gastric juice and further are characterized by high phosphorus content. These, like the nucleoproteids, are of a proteid nature; upon further decomposition they yield albumen and nucleic or nucleinic acid, and can be further broken down into the xanthin bases or purin bodies. It is more particularly the existence of phosphorus and these xanthin bases that differentiate the nucleus from the cell body. How the iron is combined is as yet undetermined. We know at most from Spitzer's observations that it is the iron containing products of dissociation of the nucleoproteids that retain the oxidative properties. But clearly in the nucleus we have as essential constituents compound proteids of great complexity of organization. As Spitzer, Herter and others have indicated, the iron is of the utmost importance in bringing about oxidative processes, while the phosphorus likewise would appear to favour oxidative changes. *These and other chemical considerations tend to the conclusion that nuclear material possesses in itself potentialities superior to those of any ordinary constituent of the cell body,* and again support the view that the nucleus is the centre or source of the higher cell activities. Jacques Loeb, indeed, has been led to the conclusion that the nucleus is the centre of the oxidative processes of the cell, and the correctness of this view has of late been demonstrated by his pupil Lillie.

(6) *The Ferment Actions of the Cell and their Relationship to Nuclear Activity.*

It would open up too large a field to detail and weigh the data indicating that nuclear matter is the essential source of those bodies which afford the enzyme actions of the cell. We would merely note in passing that it is now universally accepted that much of cell function—I do not say all—is the outcome of enzyme action, and I would recall the data already brought forward to show that in the absence of the nucleus the higher specific cell activities are at a standstill; the evidence also of the relationship of the nucleus to the formation of zymogens.

Referring to the discharge of plasmosomes or spherules of nuclear matter into the cell body it may now be asked what chemical processes do these indicate. It is suggestive that under normal conditions this discharge has been noted in cells affording specific secretions, and in abnormal conditions accompanied by the accumulation in the cell body of modified paraplasmaic granules or globules. It is at least suggestive that in autolysis (the self digestion of tissues removed from the body

under aseptic conditions) we note a diffusion out of nuclear chromatin, and following upon this the formation in the cell body of myelin granules and masses. Everything indicates that these myelin masses so formed are complex lipid bodies; they contain fatty acids, more particularly oleates, and studying the composition of what is regarded as the simplest group, the lecithins, we find that they are compounds of a nitrogenous base (cholin) with glycerophosphoric acid and a fatty acid. Where these make their appearance in the cell undergoing autolysis, and probably in other conditions, we must conclude that the glycerophosphoric acid is of nuclear origin, and, leaving aside for the moment the question of the seat of origin of the nitrogenous base, remembering that the nucleus of the ordinary cell is devoid of fat, we are led to regard these lecithins as combinations between matter of nuclear origin and fatty matter from the cell body. These lecithins are bodies having very remarkable properties, both chemical and physical; they have great powers of holding other substances in solution, and this is true of all the myelin bodies. It may well be that the suggestive series of nuclear changes and cell accumulations which we find in the cloudy and fatty groups of degenerations, represents successive stages in which the development and dissociation of bodies of this type play the essential part. In our studies in Montreal during the last three years on calcareous and fatty degeneration this matter of the formation of compounds of albumen and fat has constantly been brought before us. Dr. Klotz (in this following upon the conclusions of Brücke long years ago) has brought forward data favouring the view that direct union may occur between the two; but he will be the first to admit that an absolute chemical proof of the existence of such compounds is singularly difficult to adduce. It is true that working with Professor Aschoff at Marburg, we have recently demonstrated the combination between nitrogenous bases, such as cholin, and oleic acid, but this is another matter—nitrogenous bases while built up into proteids are not proteids. If then we are not as yet wholly certain of the existence of oleates of albumen, it is a well ascertained chemical fact that lecithin can combine directly with albumen to form albuminates. Thus, lipoids of the nature of the lecithins afford us the necessary linkage bodies between various albumens and between albuminous and fatty acids.* As regards their importance in this connection we would only call attention to Preston Kyes' remarkable observations upon the part played by lecithin as complement, or linkage body, between certain

* The mucins would seem to represent a parallel group of carbohydrate-proteid compounds, and the histological observations of Steinhaus, Maximero and others demonstrate most clearly that nuclear matter is concerned in their development; indeed, in goblet cells, according to Steinhaus, there is a total conversion of the old nucleus of the cell into mucinogen.

serum- and cell-proteids and snake venom. It is interesting to note how almost simultaneously during the last few months independent workers in Germany, France, the United States and England, approaching the subject from widely different points of view have converged to the same conclusion that the lipoids are of singular importance in the cell and in relationship to metabolic processes. We seem at the threshold and in its shadow, and see already the light within. But here at the threshold I must stop.

Before closing, however, there is a question which I doubt not has arisen in your minds, and one which must be answered.—“You arrogant,” it will be said, “all these powers to the nucleus—what part is played by the cytoplasm?” To this I would answer that passing further and further backwards in our endeavour to comprehend what is life, if we believe in living matter and that vital phenomena are the expression of the effects of physical and chemical forces acting upon that matter, then our ultimate conception of life must be that it is the function, or the sum of functions, of a special order of molecules. For convenience we would term these ultimate molecules of living matter, *biophores*. However much we strain our imagination it would seem impossible to conceive the existence within the cell of two orders of molecules of widely different type, but of equal value, which, by their interaction, initiate vital processes. We must premise that there is in each form of life one order of living matter. If so, the biophores must be contained either in the nuclear matter or in the cytoplasm, and as we have shown that the higher vegetative powers of the cell are intimately associated with nuclear matter, it is in the nucleus that we must locate these biophores, and we must therefore regard the cytoplasm as composed of subordinate matter and as having what must be termed sub-vital functions.

Now, the simplest conception that we can form of these biophores—and even in the very lowest forms of life they must be singularly complex—is that they are rings or rings of rings, carbon and nitrogen containing, and of the benzol type. The only satisfactory conception of growth, of multiplication of these molecules, is that the pre-existing rings possess unsatisfied affinities and attract side chains of various ions, simple and compound, from the surrounding media, and that these become grouped in a manner identical with the grouping present in the pre-existing biophore. In other words, we must regard the building of the new biophoric molecules as obeying laws of the same order as those which determine the building of ions out of a solution to form crystals of a particular form of salt, but with this difference,

that so far we have no evidence of biophores becoming formed anew save under the influence of pre-existing biophores—we know no case of spontaneous generation. Thus, growth demands affinities and side chain formation on the part of the biophores. As with evolution the biophoric molecules have become more complex we would suppose that ions and radicals have become attracted and attached not in ring arrangement but in loose series and loose connection with the biophores. As in growth new biophoric molecules are formed in association with the pre-existing the result is an inevitable tendency towards the grouping of the biophores in a central mass surrounded by a zone of other attracted matter. With the development of such a complex the biophoric molecules proper are no longer in direct and immediate relationship with the outer medium; there is interposed between the two an intermediate mass. The direct attraction of new matter is, in the main, accomplished by the intermediation of this outer cytoplasmic zone. So that eventually we reach the stage in which with increasing complexity of organization the biophoric molecules proper deprived of the outer cytoplasmic zone are unable to attract ions to themselves in the proper order—these must first have been built up into particular orders of radicals within the cytoplasm. In other words, the presence of pre-formed cytoplasm becomes essential for the continued existence and growth of the nucleus—of the nuclear-biophoric matter. Each becomes essential for the continued existence of the cell as a whole.

This, frankly, is all hypothetical, but it is the hypothesis which seems best to throw light upon and to harmonize the data we possess regarding the function and the relative importance of nucleus and cytoplasm respectively.

To-day I feel I shall have done some service if I have demonstrated the dominance of the nucleus and impressed you with the conviction that the future will see not merely a cellular but a nuclear pathology and physiology. From the *omne vivum ex vivo* to the *omne ovum ex ovo* and the *omnis cellula e cellula* of our predecessors we now reach the *omne chromosoma e chromosomate* of the modern student of development and see before us surely the conclusion *omne biophorum ex biophoro ejusdem generis*.

If this be the ultimate conclusion of the investigator it is at the same time the point from which chemist and physicist, anatomist and physiologist, pathologist and physician must start to develop harmoniously, each along his respective line, their various conceptions of vital processes, and, as the indications are that these biophores exist in the nucleus so it is that to the nucleus and its alterations each of

us, whatever his particular branch of biological science, must apply himself for the fullest, most intimate grasp of the succession of changes that take place in health as also in disease.

BILHARZIA HÆMATOBIUM.

BLOOD FLUKE.

BY

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Bilharz, in the year 1851, while engaged in the study of the diseases of Egypt, discovered that the endemic hæmaturia of that country was due to the presence in certain veins of a trematode worm to which he gave the name of "*Distoma Hæmatobium*," afterwards better known as "*Bilharzia Hæmatobium*," after the discoverer.

This disease, while very prevalent in Egypt, Arabia, Mauritius, and certain parts of South Africa, is practically unknown in America—being only met with in imported cases. These have evidently been very rarely found up to the present time, as in my search through the literature of the subject I have succeeded in finding reports of only four or five, all of which were seen in the United States.

As I have at present two cases of *Bilharzia* under observation, the patients having been infected while on military service in South Africa, it has occurred to me that in view of the many Canadians and immigrants who, having served with the British forces during the late Boer War are now settled in Canada, the disease may be more often met with than formerly.

That a large number of the men were infected with this parasite during the campaign is beyond doubt, as pointed out by Hardy and Douglass in a very interesting article on the subject in the *Lancet*, of October, 1903. What information I have been able to glean seems fully to bear this out.

Hæmaturia,—the primary and practically the only symptom of the disease in the first few years of its course,—being one common to so many pathological conditions of the genito-urinary tract, there is at once suggested a wide range of possibilities. But if the fact can be elicited that the patient had resided in a country where the parasite is indigenous the possibility of *Bilharzia* would at once be suggested, and if confirmed by a microscopic examination of the urine a great deal of unnecessary and painful instrumentation might be avoided.

As there is very little to be found relative to this parasite in our text books, the subject being left to writers on Tropical Medicine, a short description of the worm and ova together with the accompanying plate may be of assistance in recognizing the latter under the microscope.

The worm is a soft white creature, differing in shape and size in the two sexes. The body of the male, about 12 mm. long by 1 mm. broad, is flat with the edges enfolding over the ventral surface forming a cylinder wherein the female is enclosed during congress.

The female is filiform in shape and longer than the male, measuring about 20 mm. and darker in colour.

The ovum, the most important feature for the purpose of diagnosis, is oval and measures about 0.16 mm. in length, though there is a considerable variation in size in those seen on any one slide under the microscope. They present a terminal or lateral spine, as the case may be,—which difference has not as yet been satisfactorily explained. While the spine is invariably at the end on the ova found in the urine, it is said that those found in the fæces present the lateral spine. In an article by Herbert Gunn in the *Journal of the American Medical Association*, Vol. XLVI, No. 14, he expressed the opinion that the lateral-spined ova are produced by a different species of worm.

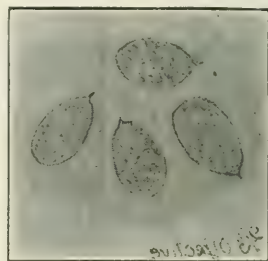
Apparently very little has been added to our knowledge of the habitat and life history of the worm since the investigation of Bilharz. In regard to the mode of infection, while it is generally admitted that the parasite gains entrance into the human body by being swallowed in infected food and water, it seems probable that it may directly infect the bladder and rectum through the external orifices while bathing. By whatever channel the worm gains entrance into the body it eventually finds its way into the veins of the portal circulation and urinary organs, principally in those surrounding the bladder and rectum, where they make for themselves in the walls of these viscera under the mucus lining, a smooth walled nidus communicating with the veins and which is in reality nothing but the altered blood vessel. The ova then force their way from the nest into these hollow viscera and appear in the urine and fæces, the sharp spines with which they are armed possibly assisting them in their migration through the intervening tissues. The parasite itself is never found in the excreta.

It would appear that, in the vast majority of cases of Bilharzia, the lesions caused by the parasite and the migrating ova must be very slight indeed, as little inconvenience is experienced by the host,—the only symptoms being the presence of some small clots of blood in the urine, the slight burning in the urethra on micturition.

In Natal a very large number of the male inhabitants harbour the parasite, but few are seriously inconvenienced. This applies particularly to the young boys of the country, who seem to be exceedingly susceptible, but, as a rule, on arriving at puberty they then throw off the disease.

Bilharzia may, however, give rise to the most intense suffering; incessant desire to micturate, dysentery, profuse hæmaturia and melæna being the principal symptoms. The patient loses weight and becomes anæmic and dull from loss of blood. In these severe cases the mucous membrane of the bladder will be found swollen and hyperæmic, with ecchymosed patches varying in size to that of a shilling and coated with a tough mucus or layer of grayish yellow exudation. When the intestines are involved the walls of the rectum show similar lesions, and dysentery, tenesmus and melæna set in.

Even in those mild cases in which the patient is not aware that he harbours the disease, the ova acting as foreign bodies in the bladder,



not uncommonly become encrusted with urinary salts and form the nucleus of small calculi which, as a rule, pass out through the urethra. It is remarkable, however, that in Egypt not only does this occur more frequently than in other countries where the parasite is indigenous, but the disease often leads to the formation of very large stones necessitating surgical measures for their removal.

The course of the disease is slow and insidious, often lasting many years before any serious symptoms develop, but eventually it may spread throughout the whole urinary tract and the ureters become occluded by the masses of ova and the infiltration of the walls.

The danger to life depends very much upon the severity of the infection, but is, as a rule, not serious, as in the great majority of cases the parasite dies within the host and recovery follows. Even, however, in slight infections it is the cause of a very distinct predisposition to intercurrent diseases.

The treatment of Bilharzia is unsatisfactory in the extreme, and while the symptoms may be relieved to some extent, nothing has as yet been found that will affect the parent worm and thus rid the patient of the disease, though a large number of drugs have been tried, among which are chiefly the urinary antiseptics as urotropine, benzoic acid, salol and methylene blue. Draughts containing male fern or turpentine seem to have been most used, but with indifferent success.

The condition of the bladder may be treated by irrigations containing one of the many mild antiseptics generally used for that purpose with a very fairly satisfactory but temporary result. The general health should receive attention and be kept up by good food and tonics—iron being indicated where there is a severe loss of blood.

Of the two cases I now have under observation the first came to me complaining of "passing blood in the urine, vague pains over the region of the kidneys, slight burning on micturition and increased frequency, loss of weight, and a general feeling of weakness and lassitude." His appearance was, however, good, temperature and pulse normal, mucous membranes good colour.

On his first visit to me I did not go into the history of the case, but merely inquired into the symptoms and made a three-beaker test of the urine, which showed the whole bulk to be distinctly blood-tinged, and in the third beaker a large quantity of blood clots, varying in size from a grain of rice to that of a pea, also a considerable quantity of deposit.

This specimen was handed to Dr. W. H. Delany, pathologist at Jeffery Hale's Hospital, who reported that it contained besides blood and vesical epithelium a great number of the ova of Bilharzia Hæmatobium.

Upon again seeing the patient I learned that in 1900 he went out to South Africa with one of the Canadian Contingents and served there for three years, being stationed for a good part of the time in Natal. Shortly after his discharge in 1903 he noticed for the first time an increased frequency in the desire to micturate, and occasionally the passage of a few small clots of blood at the end of the act. The presence of these clots gradually became more and more frequent until, at last, it occurred each time he voided urine.

During the first two years there were no further symptoms, but about a year ago the quantity of blood increased and he began to suffer from pain in the region of the kidneys and perineum, with a general feeling of weakness and lassitude. Recently he has at times been troubled with diarrhoea, and occasionally has noticed streaks of blood in the stools. As the nature of his employment necessitated a good

deal of heavy work and exposure, which seemed to aggravate all the symptoms, he was obliged to give it up.

Since the beginning of the trouble he has been under almost constant treatment for some one of the many troubles of which hæmaturia is a symptom, the actual condition never having been recognized.

The examination of the interior of the bladder, while not altogether satisfactory on account of the blood obscuring the view, reveals no marked changes in the mucosa beyond a general hyperæmia, nor could any changes be detected in the mucous membrane of the rectum.

My second case very well illustrates the fact that while a patient may have a considerable number of ova in the urine he does not necessarily suffer any inconvenience, even though the disease is of some years standing.

This man, after having served in South Africa for several years in the Constabulary, noticed on three or four occasions a very small clots of blood in his urine—and, although he had very often heard of “Red Water” and had actually known of several men in his company who had suffered from it, he did not seem to connect his own symptoms with the disease, as they were so slight and his general health perfect.

The ova in this case, while not so numerous as in the first, can be found without difficulty on every slide made from the deposit in the urine which contains also a considerable amount of pus and epithelium and a few red blood cells. Dr. Delany reports that in both cases the ova contained in the urine present the terminal spines, and that he has been unable to find any in the fæces notwithstanding the fact that one of the patients has symptoms of beginning trouble in the rectum.

The examination of the blood of these two patients, as is always the case in parasitic diseases, shows an increase in the number of Eosinophiles to seventeen per cent. and five per cent. respectively.

While in the past Bilharzia Hæmatobium has been looked upon in America rather as a medical curiosity than as one of the diseases we have to deal with, it appears to me, from what I can learn of the prevalence of the disease among the men who served in South Africa, that it may now be much more often met with,—as in all probability many of the ex-soldiers now scattered throughout the Dominion harbour the parasite, and sooner or later will present themselves for diagnosis and treatment.

I wish to add my sincere thanks to Dr. Delany for his valuable assistance, and particularly for the diagnosis in both these cases.

ADDRESS IN SURGERY.

Delivered at the Seventy-Fourth Annual Meeting of the British Medical Association.

BY

SIR VICTOR HORSLEY, F.R.C.S., F.R.S.

Late Chairman of the Representative Meeting of the British Medical Association; Surgeon to University College Hospital, and to the National Hospital for the Paralysed and Epileptic, Queen Square.

ON THE TECHNIQUE OF OPERATIONS ON THE CENTRAL NERVOUS SYSTEM.

In considering in what way I could best fulfil the extremely honourable and at the same time responsible duty of delivering the Address in Surgery on the occasion of such a meeting as this, it occurred to me that exactly twenty years had elapsed since I showed at the annual meeting of the Association at Brighton the first three patients upon whom I had operated at Queen Square Hospital for intracranial disease. Many of what were then regarded as special points in the technique of operations on the central nervous system are now, thanks to the work of surgeons in every part of the world, household words. The principles then advanced were chiefly based on experiments on animals. During the past twenty years further experimental research on animals and clinical observations on human beings have confirmed and extended the general soundness of the broad principles underlying the treatment then proposed.

I intend, therefore, to-night to analyse my cases at the National Hospital, Queen Square, and facts which we have gained therefrom since 1886, while from my experience at University College Hospital and in private practice, I shall only quote such cases as are unique, or particularly demonstrate certain points.

The considerable interval of time which has elapsed since the Brighton meeting has also permitted of such an accumulation of facts that important questions of diagnosis and prognosis, which were matters of much doubt in 1886, can now be more readily answered. In fact, the advance in technique of the surgical treatment of diseases of the brain and the spinal cord has been relatively less than the improvement in our knowledge of the seat and nature of the diseases for which surgical intervention is useful and necessary.

Correct diagnosis in diseases of the nervous system is still far to seek, and yet operative treatment in such a difficult field is often expected to yield as good results as the relatively easier and simpler work of curing herniæ or removing abdominal tumours.

It will soon appear of what immense importance it is to the community that the study of neurology should be pushed forward by every means in our power in order that the earliest commencement of a tumour of the brain should be determined as certainly as that of one nearer the surface of the body. The International Commission for the advance of this branch of science, which owes its inception to the great German anatomists, Professor Waldeyer and the late Professor His, will, it is hoped, have a co-ordinating and fostering influence on the work.

But the twenty years of medical and surgical work which have passed have done more than improve our topographical knowledge of the probable seat of encephalic lesions, they have taught us from the operating theatre what previous generations had never learnt in the *post mortem* room—namely, a great deal of the vital pathology and true anatomical nature of brain disease. How often we see the nature, structure and treatment of cerebral tumours discussed on the basis of such growths as are seen at autopsies, that is, when they have reached such a maximal degree of development as to have caused death! *Post-mortem* records can never teach what the careful study of the living tumours exposed in an operation can demonstrate, since in almost every case the former condition is practically what we may term inoperable.

I must first briefly allude to the responsibility of the surgeon in the treatment of diseases of the central nervous system. As in all special branches of medicine and surgery which are in a process of evolution, it is not easy to assign credit or blame when the course of treatment pursued is respectively successful or unsuccessful; but so long as our powers of diagnosis remain as imperfect as they are so long will the vulgar error of regarding surgical treatment as a *dernier ressort* be committed. This question, namely, When should medicinal treatment be given up and operative treatment substituted? has been raised again and again and hotly discussed in connexion with many diseases, notably appendicitis.

In 1890, hoping to secure a more logical and definite pronouncement on this fundamental point at the International Medical Congress, I proposed that in cases of Jacksonian epilepsy and other syndromata which suggested the existence of gross organic disease of the brain, a definite probationary period of medicinal treatment should be agreed upon, and that an elementary case where no urgent symptoms like optic neuritis existed surgical treatment should be employed after thorough drug medication * had been energetically applied for about six or eight weeks and cure had not appreciably resulted. No conclusion, however, was arrived at.

*Practically such drug treatment means mass treatment with the iodides, combined or not with mercury.

Again, in 1893 I was unable to get an expression of opinion on this point, although Dr. Allan Starr, in his well-known work on "Brain Surgery," had also formulated the conclusion that the surgeon should be invited to consultation in the case after about three months' medical treatment had been unsuccessful. Although such a course is in general the practice at the Queen Square Hospital, this view of the situation unfortunately has not yet been discussed in the profession. Even in the present I have been asked to operate on a patient with a lateral tumour of the cerebellum who had been known to have optic neuritis for nine years, and last year I did operate on such a patient who had been known to have optic neuritis for thirteen years.

Assuming now that in a given case surgical treatment is considered advisable, the question immediately arises for what precise purpose is it to be employed, for all treatment, medical or surgical, is either palliative or curative. These two aspects of the matter require separate consideration.

PALLIATIVE SURGICAL PROCEDURES.

It is a prominent characteristic of intracranial disease that (1) it is liable to produce optic neuritis, which customarily ends in total blindness; (2) it may concomitantly cause severe headache and vomiting, all of which symptoms are dependent upon pressure, and can be completely palliated or wholly removed by making a sufficiently free opening in the skull and dura mater.

The first of these, namely, optic neuritis, is a condition which, owing to its causing blindness, is of such vital importance to the interest of the patient, and so to the community, that it merits full attention. In 1886 its pathological causation was a matter of acute controversy, but we learnt by a very few years of operative surgical experience that, whatever other factors might be concomitant, the most important one in the production of optic neuritis was increase of the intracranial tension, and thus it happened that our earliest experience was the strikingly rapid subsidence of the optic neuritis when the skull and dura were opened. Therefore it is now possible to dogmatize on this question, and to say that in no case of optic neuritis (not of course of toxæmic or anæmic origin) should the process be allowed to continue after it has once been diagnosed, and that if blindness results therefrom the responsibility is very heavy on any one who fails to advise such a simple proceeding as opening the dura mater. The gravity of this responsibility does not seem to be generally recognized, and it is owing to this as well as to the backward state of neurological diagnosis that melancholy cases such as the following occur. A. B., lady, married, developed symptoms of cerebral tumour with acute optic neuritis, and was told by a neurologist

that nothing could be done surgically. Subsequently, and after some treatment with the iodides, the neuritis subsided into complete atrophy and blindness, while the cerebral lesion gradually retrogressed. When the patient came under my observation in the spring of this year, her physical condition was apparently perfectly normal except the permanent loss of sight. This calamity would have been wholly avoided by operating to relieve the optic neuritis, even if nothing further had been attempted to deal with the lesion itself.

As regards the procedure to be adopted, my own experience is that although in rare instances the neuritis may begin to subside after even the first stage of only opening the skull, it is, as a rule, necessary to make a free opening in the dura mater to effect this purpose. One reservation must be made, that in cases where the tumour directly involves the optic tract, the specially delicate anatomical structure of the optic tract may negative the attaining of this otherwise invariable result.

In predicting what will be the condition of vision after surgical treatment of the optic neuritis, everything depends upon the care with which the ophthalmoscopic appearances of the disc are interpreted. Yellowish-white stippling, patches of exudation, or opal white atrophic changes, especially when associated with macular figures, all indicate that the secondary changes in the disc are likely to be permanent, and, therefore in proportion to their development so the vision will be impaired whereas when the loss of vision has been dependent simply on the swelling of the disc, then not only is the sight saved but largely improved. For some further discussion of this most important point from the point of view of the ophthalmologist, I would refer to Mr. Leslie Paton's recent analysis of the Queen Square cases which contains many of the results of my operations.

One more point must be mentioned in connexion with optic neuritis, because although of more importance in diagnosis than technical procedure I find it is of the utmost value in indicating to the surgeon on which side he should operate. I refer to the localizing value of the incidence of the optic neuritis. Varying statements have been made on this subject from time to time, namely, that (a) the optic neuritis begins on the side of the lesion, (b) that it begins on the side opposite to the lesion, (c) that sometimes one thing happens and sometimes the other according to the position of the lesion in the skull, for example, whether above or below the tentorium and according to the nature of the lesion. I wish to lay down the position drawn from an examination of my own cases of intracranial tumour that the optic neuritis commences on the side of the lesion. I am quite aware that true exceptions may yet be found to this rule, but I would point out that some of the exceptions hitherto described have not been real, that in any given case it is not a

question merely of the number of dioptries of swelling of the disc, but it is also a matter of the anatomical changes in the disc, and finally that by the time the patient comes under observation the disc on the side of the lesion may be actually subsiding into decadent conditions at a time when the opposite disc is rising into its maximal swelling.

To sum up, then, during the past twenty years we have learnt that although the old procedure of de Wecker of incising the swollen sheath of the optic nerve in the orbit is of no avail, we can with certainty avert blindness by opening the subdural space early in cases of intracranial disease. [Preferably in the basal temporal region of the right side, that is, assuming that no attempt is made to attack the disease itself.]

CURATIVE SURGICAL PROCEDURE.

If the operation is undertaken for the purpose of effecting a cure we have to consider (1) what is the nature of the disease, (2) what loss or aberration of nerve function it causes, (3) whether if the lesion be wholly extirpated there will be a recovery from the disorder of function, and (4) whether any loss which may have been present before operation will be made permanent by the necessary extirpation of particular regions of the brain.

On points like the last it is evident that we cannot give a satisfactory opinion until we know precisely first what parts of the central nervous system alone contain the representation of movements or the record of sensation, and consequently of what parts does destruction entail permanent loss of function. In other words, we require to learn from the cerebral physiologist under what circumstances and to what extent can we get compensation of function when various parts of the cerebrum and cerebellum are destroyed.

1. *As Regards the Cerebrum.*—Apparently from the clinical records we can generalize thus far, that special motor functions cannot be restored if the whole of their cortical representation be removed. The same thing is probably also true of the special senses, and certainly is true of the hemianopic representation of sight. Succinctly stated, this amounts to the generalization that compensation is not possible after the destruction of middle level centres. The higher sensory representations and *a fortiori* the intellectual functions are, on the contrary, not permanently abrogated by the destruction of any part of the cerebral hemisphere. The net conclusion, however, must be that as little injury as possible should be done, and no more removed than is absolutely necessary.*

*It being always understood that this does not apply to the skull but only to the nerve structures. The opening in the skull must always be free to allow of a proper survey of the brain.

2. *As Regards the Cerebellum.*—This question of compensatory power is of notable scientific interest when studied in the cerebrum, which is so clearly an assemblage of different nerve centres (in fact we might almost say organs), but it is no less interesting in the study of a homogeneous structure like the cerebellum, and has assumed a particular importance in the present subject because of Professor Frazier's proposal to extirpate the lateral lobe of the cerebellum in preference to pushing it aside by displacement for the purpose of reaching deep-seated tumours. My own experience is against such extirpations for convenience. In fact, I regard them as an unnecessary mutilation, though quite admitting that in the process of removing a large tumour in that region the cerebellum is considerably bruised when so pushed aside. I ought to add that although I have removed a considerable number of lateral recess cerebellar growths, I have never found it necessary to do more than compress the cerebellum aside (see Fig. 4, Plate 4).

As to whether there is loss of function from such displacement involving bruising of the cerebellum, I have followed up the longest surviving case that I could find in the Queen Square series, namely, one of cerebellar tumour and cyst combined, which I operated on eleven years ago, when the patient was a boy of 14. He is now a healthy young man of 25. In this case the tumour was a large one, situated in the right lateral lobe of the cerebellum, which was consequently markedly compressed, and probably the dentate nucleus of that side was also affected. The only indication of loss of physiological function that he now presents is a slight unsteadiness of the hand when he is particularly fatigued, as for instance after a long bicycle ride. There is distinctly a plus tension of the normal cerebro-spinal fluid. As far as the cerebellum is concerned, whether this remarkable recovery is due to restoration of function of the bruised portions or compensation from the uninjured part cannot yet be determined with certainty (I believe the former), but the conclusion I would draw is that we should preserve as much as possible of every portion of the encephalon which is not absolutely shown to be diseased.

At any rate cases either cerebral or cerebellar dealt with on these lines show a remarkable power of recovery of function.

CONSIDERATION OF THE DETAILS OF OPERATIVE PROCEDURE.

Perhaps the most convenient way of continuing this review of the technique and procedure of encephalic operations will be by taking the essential steps of such operations *seriatim*, and virtually it will be found that the fundamental purpose of every detail is the prevention of shock

and the maintenance of the physiological integrity of the nervous system.

(a) PREVIOUS PREPARATION.

The general preparation of the patient by dieting, enemata, etc., is the same as for all operations. In a few instances I have found calcium chloride of probable service in cases where oozing from the bone or superficial tissues was to be expected, as in cases of penetrating endotheliomata of the skull.

The head and cavities in relation to it having been thoroughly disinfected for two or more days with sublimate and carbolic acid, the patient is placed on the table in such a position that, while the head is elevated to diminish the pressure in the venous sinuses, the shoulders are also slightly raised, so that the glottic respiration is not interfered with. If the operation is to be on the cerebellum the patient is placed on his side, with the uppermost arm drawn downwards. By these simple means complete access can be gained for any operation on the encephalon without subjecting the patient to constraint which affects both the circulation and the respiration. This question of posture of the head is no mere matter of convenience to the operator, it is an extremely serious one to the patient for the satisfactory performance of the operation, and is only to be secured by having a suitable head-rest, such as the fork rest of Professor Frazier or the one I use.

(b) ANAESTHESIA.

The all-important question of anaesthesia must next be considered. My own experience is confined to general anaesthesia, for I have never yet employed the intraspinal injection of cocaine or stovaine.

Since the use of an anaesthetic agent should, I think, extend beyond the production of analgesia, and include among other purposes the convenience of influencing the blood pressure at will, intraspinal anaesthesia is of too limited applicability because control of the intensity of narcosis is lost. Moreover, in many cases the psychical effect produced by the preparations for an operation upon a patient suffering from a lesion of the central nervous system might be unfavourable unless consciousness were abolished. However, after the very remarkable results of Morton and others, this question must be regarded as quite an open one and may indeed help to decide the best means of avoiding shock in this department of surgery.

In 1886 I suggested, in view of the remarkable power that morphine possesses of contracting the cerebral vessels, that it was better to use a

combined anæsthesia of morphine with chloroform, a combination which many years before was largely advocated in general surgery. Unfortunately the adverse effects which morphine produces on the alimentary canal have always proved a bar to its common use. As regards the central nervous system also it has a di-advantageous action on the respiratory centre, and since the energy of this is already lowered by the shock of the operation I gave up the combined anæsthesia and have employed pure chloroform only for many years.

Of the general anæsthetic substances at our disposal, therefore, there are at the present time two for practical discussion, namely, ether and chloroform.

Of these two, numerous experiments on animals in 1883-5 proved to me the striking disadvantages of ether, in spite of its greater safety, which it owes to its far lower physiological toxicity on nerve tissues. Apart from this specific difference the most important contrast between the two substances is due to their respective effects on the blood circulation. Ether directly causes, besides a rise of the blood pressure, a notable increase of the blood venosity, and therefore much additional and troublesome hæmorrhage. In its later effects—that is, on recovery—it causes excitement, as well as in many cases notable headache and, of course, vomiting.

Ether I regard, therefore as inadmissible as an anæsthetic in operations on the central nervous system; but in saying this I must not be thought to be criticizing my colleagues, especially American surgeons, who have accomplished most brilliant results under ether narcosis.

Chloroform, *per contra*, causes a fall of blood pressure with relatively less blood venosity—although this is by no means absent, as will be seen below. It therefore does not aggravate the bleeding, nor embarrass the respiration by causing bronchorrhœa.

By its more essentially paralysing action on nerve centres it causes practically no after excitement and but moderate headache. It is probably as frequently followed by obstinate sickness, but this depends on many other correlative factors, and primarily on the dose used (*vide infra*). Chloroform, however, as already stated, is more dangerous. It kills by paralysis of the respiratory centre as often or more often than by paralysis of the heart.

Moreover, all cases of increased inter-cranial tension (as is now well recognized) are liable to die at any moment from sudden paralysis of the respiratory centre. How often one sees this accident in cases of intracranial tumour which are only at the very last transferred for surgical treatment! Two or three instances will suffice.

Case I.—Boy, aged 17. National Hospital, Queen Square. Admitted with all symptoms of localized cerebral tumour. Prepared for operation. On morning of day of operation suddenly fell back "dead" in bed. Respiration stopped, heart beat continued. Failure to restore respiratory centre. *Post-mortem* examination: Small encapsulated tumour of the leg area.

Case II.—Woman, aged 42. University College Hospital. Admitted with symptoms of cerebellar tumour. Operation advised. Patient decided to have same done at home. Two hours before leaving hospital suddenly collapsed. Respiration stopped, heart beat continued. Failure to restore respiratory centre. *Post-mortem* examination: Tumour of interior of lateral lobe of cerebellum.

Case III.—Woman, aged 38. Private practice. "Tumour of brain" had been diagnosed nine years before. Admitted into nursing home with symptoms of lateral recess cerebellar tumour. Prepared for operation. Twenty-four hours before operation attack of cerebral vomiting, followed by sudden arrest of respiration. Heart beat continued. Artificial respiration combined with opening of the skull failed to restore respiratory centre. *Post-mortem*, lateral recess cerebellar tumour.

In the literature of the early days of cerebral surgery may be found instances of death on the operation table. I have no doubt that these were due to failure of the respiratory centre, owing to a dose of chloroform having been given which, though perhaps not necessarily lethal in an ordinary case, was fully so to a patient whose bulb was hampered by previous tumour pressure. Chloroform, therefore, must be used with caution in the surgery of the nervous system, to avoid giving a dose which might bring about fatal arrest of the respiratory centre.

The immediate problem is how to regulate the dosage of chloroform, and let me say, in passing, that the whole of my consideration of this question is applicable to all operations, and not only those on the central nervous system. Yet, curiously enough, because the early efforts of Snow, Clover, and others to obtain the administration of such drug in known quantities were not entirely successful, the present haphazard and dangerous method of unknown dosage became customary and universal.

At the original suggestion of Dr. Waller I obtained, on July 10th, 1901, from the Council of our Association the appointment of a Research Committee to secure data for the administration of choloform in known doses commencing with its precise quantitative determination. The results so far obtained have already proved of notable value.

The committee have found that less than 2 per cent. of chloroform vapour in the atmosphere breathed by a patient is enough to produce deep

marcosis and that a much smaller dose is required to maintain unconsciousness to pain. Various apparatuses have been devised to give known percentages of chloroform. Of these I have worked practically entirely with Mr. Vernon Harcourt's.

Much has been written on the subject of chloroform administration, but I must state categorically what I believe to be the most profitable way in which it can be used in operations on the nervous system, and how its disadvantages can be mitigated or avoided.

If the mask of the inhaler be made to fit by wet aseptic towels, the amount of the dose given will be under complete control. With the dose commencing at 0.5 per cent., and rising in one to two minutes to 2 per cent., the patient ought to be ready for operation after five to eight minutes. If the initial narcosis be complete no adverse event—for example, vomiting—will occur. If it be incomplete when the operation is commenced various drawbacks will appear. This is, of course, well recognized as a general principle by anaesthetists, but is so salient a point as to deserve repetition.

I desire now to refer to the use of chloroform during the operation, and, first, as regards its use as an anaesthetic or pain-preventing agent.

I venture to repeat what I constantly stated in the chloroform discussions of the last three years, that having now, by means of the Harcourt or other regulator, the power of giving known doses, we ought to arrange the narcosis strictly according to the nerve excitations it is intended to drown, and so avoid contributing to the patient's discomfort by giving unnecessary quantities of the drug.

As a rule the amount of 2 per cent. is given for about five minutes before the incision of the skin and reflection of the flap which constitutes the maximal pain period of the operation. This completed, the dose can be lowered by pushing the tap back and the bone be removed at 1 per cent. As the dura is a sensitive membrane supplied by the fifth cranial nerve the dose should be somewhat raised just previous to its incision to prevent reflex starts or movements on the part of the patient.

As soon as the dura is opened the encephalon can be dealt with without causing any pain except if the course of the fillet or one of the peripheral sensory cranial nerves be accidentally irritated. Consequently all this part of the operation is done under less than 0.5 per cent. of chloroform in the air respired, an amount which of course is far below that required in the induction stage. Indeed in many cases (the edges of the wound being as usual thoroughly protected by gauze) the chloroform can be entirely shut off, the longest period that I have been able to do this for being twenty minutes. This, however, was a case of a cerebellar

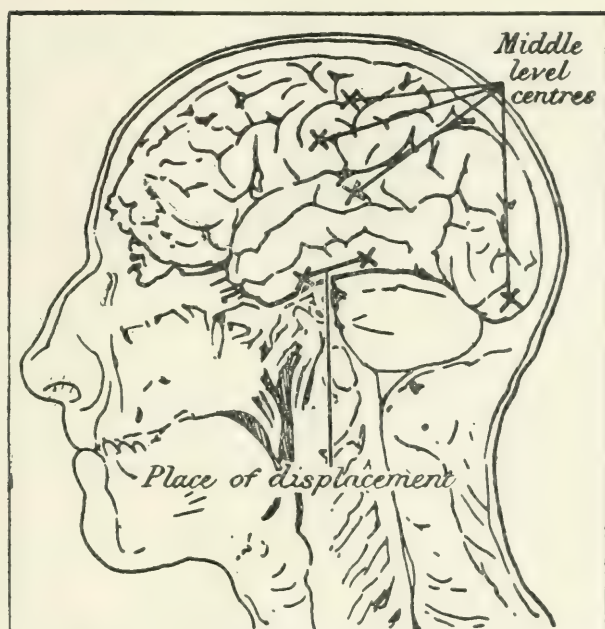


Fig. 3.—From Fraser's Guide to Operations on the Brain.

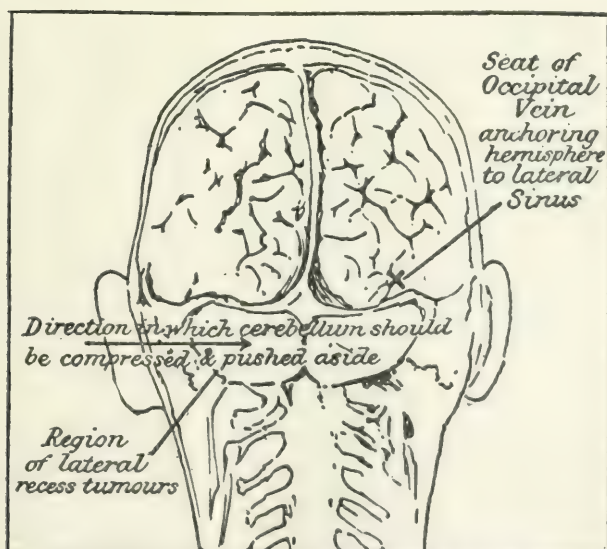


Fig. 4.—From Fraser's Guide to Operations on the Brain.

tumour in a child, and I have never been able in the adult to exceed twelve or fifteen minutes before the return of the reflexes of the limbs necessitated the renewed administration of the drug. After the encephalic lesion is dealt with the percentage always should be raised to about 0.5 or even 1 per cent. to provide for the insertion of the sutures in the skin, as naturally that is a strong pathic stimulus. Finally this percentage is continued to the commencement of the dressing to prevent the accident of vomiting occurring before the protecting rubber bib can be applied.

(c) MAINTENANCE OF THE BODY TEMPERATURE.

One of the depressant physiological effects of the general anæsthetic requires consideration, and that is the remarkable influence which Dr. Horatio Wool and Dr. Hare have done so much to elucidate—namely, a high degree of power to lower the temperature of the body, and therewith emphasize the shock of the operation.

This is of course characteristic of all narcotic substances (cf. Chloral, Lauder Brunton). Ether, for example, in a very short time will, as Dr. Hare has shown, lower the temperature of the body two degrees Fahrenheit. For this reason I think that all operating rooms should be at a temperature of not less than 75° F., and that the operating table should be provided with a suitable hot water bed.

While, however, cooling due to the anæsthesia can thus be readily combated, my experimental work of the last twenty years on both the carnivora and monkeys has convinced me that to maintain the physiological energy of the central nervous system and prevent shock thereto it is necessary during all operative procedures on the skull and its cavity to prevent cooling by radiation from the brain exposed in the wound. The wound, therefore, should be constantly irrigated, usually with a solution of sublimate of 1 in 10,000 strength, or with saline. These lotions are put into the irrigator at a temperature of 115° for the reason to be detailed directly, and the flow is regulated at will by an assistant.

While, therefore, a follower of Professor Cheever and others, in thinking that much shock can be prevented by artificially maintaining the general temperature of the body, I consider we must also preclude local cooling.

The use of the hot irrigation fluid, however, is not only to prevent cooling of the nerve centres: it also has another purpose—namely, the arrest of capillary and arterial hæmorrhage. I, therefore, take up the question now of hæmorrhage: and it is, of course, only necessary to speak on this occasion of the hæmorrhage from the central nervous system



Fig. 9.—Brain of macaque monkey, showing effect of vein ligation for displacement of hemisphere.

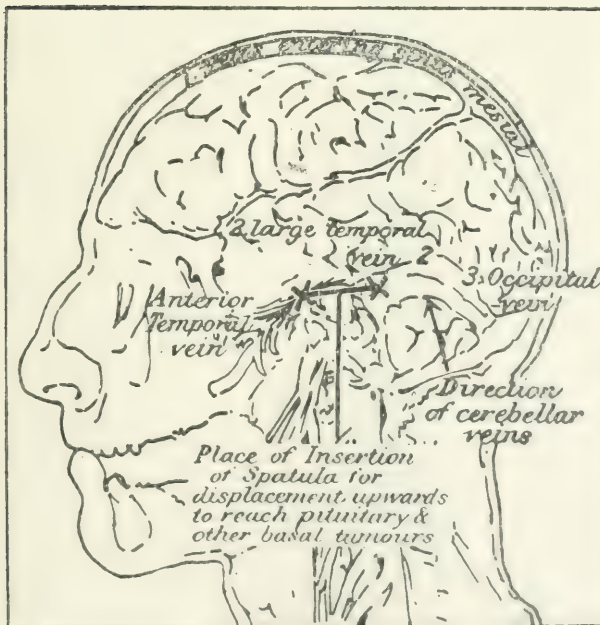


Fig. 10.—From Fraser's Guide to Operations on the Brain.

itself—unavoidable hamorrhage met with in dealing with the nerve tissues.

(d) HAEMORRHAGES.

The first general principle is the recognition of the fact, originally established by Cohnheim's researches, that as few vessels as possible should be obstructed; and, again, experiments on animals show that in encephalic surgery this principle must be followed as closely in the case of the veins as in the case of arteries. For instance, in the monkey (Fig. 9, Plate 4), as well as in man, the blocking of the large temporo-sphenoidal vein (Fig. 10) and the most anterior external occipital vein produces softening of the posterior part of the hemisphere. In pursuance of this principle, where it is necessary to remove large portions of the brain, the branches of vessels to be divided should be severed as far as possible from the trunk. A few points in detail must now be discussed according to the nature of the vessel.

Arteries.—From time to time it has been proposed to tie the main arteries—for example, the carotid, with the view of producing a large control of the blood flow from the cerebral arteries. But a thorough consideration of the cases in which this has had to be done by reason of operative necessities has convinced me that it is a measure to be avoided as far as it possibly can be. For instance, when ligature of the carotid has been found necessary in the case where a portion of the hemisphere has been partly displaced and compressed to gain access to a basal tumour, etc., serious and even fatal secondary cedema and softening has proved the adverse influence of this proceeding. On the whole, I cannot suggest anything better than the original plan of tying all the arteries around the lesion before extirpating it; and inasmuch as all arterial supply of the encephalon is necessarily from below upwards, it is better to commence the excision of a lesion by beginning the incision in the brain below, and carrying it upwards and towards the mesial plane.

Arterioles and Capillaries.—Although it is necessary that every bleeding artery should be secured by ligature—and on this point one cannot too strongly emphasize the dictum of von Bergmann,² that it is very unsafe to trust to tampon pressure—it is remarkably easy to arrest capillary oozing and arteriole oozing from the brain by the simple means of hot irrigation. The most accurate work on this subject to my knowledge is that of the late Dr. Milne Murray,³ who from his experiments came to the following conclusion, which I prefer to quote in his own words: "It is certain that water from 70° F. to 103° or 105° F. will invariably dilate blood vessels and promote the flow from open ones, but it is equally certain that water of temperatures from 110° F. to 120° F.

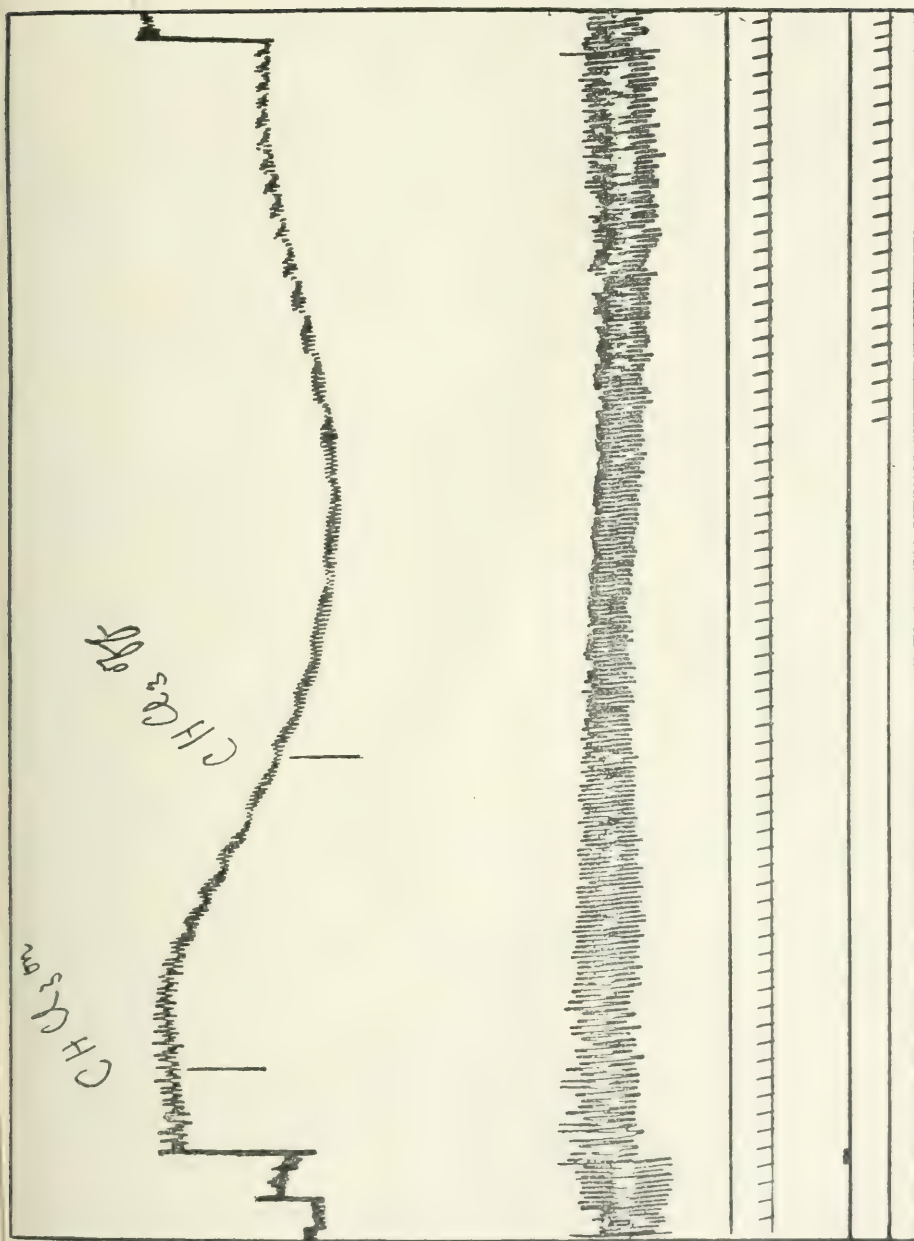


FIG. 11.—Kymographic tracing of the blood pressure (highest curve), respiratory movements (second line), and time marker (two seconds intervals). It will be seen that while the blood pressure was at its highest (the animal, a dog, lying then under ether), carbon-form vapour was given instead of the point marked "CHCl₃ on." With this given, the pressure began to fall, and continued to fall, and continued to fall, for about a minute, the fall continuing after the carbon-form was shut off at "CHCl₃ off." Note also the effect of Chloroform in gradually diminishing the expiratory function of the respiratory centre (Higginings-Jackson, Laborle), thus leading to blood venosity. (See paragraph, page 618.)

will have just the opposite effect." Theoretically what we require is that the irrigation fluid shall at the moment of contact with the nerve tissues contract the small vessels and at the same time not cause any heat coagulation of the cut surface of the brain. In my opinion, therefore, the temperature of the fluid should not exceed 115°F .—that is, about 46°C .—but it is equally certain that it must not fall below 110°F . or 43.5°C . If a large irrigator be used it is practically an easy thing to keep the fluid at the desired temperature on account of its mass, and it is gratifying, especially in a cerebellar wound, to see the oozing gradually cease during the steady flow from the irrigator "hose" pipe.

Before leaving the question of hæmorrhage from the arterial system I must refer to the use of chloroform in this particular. As will be seen in the accompanying kymograph tracing (Fig. 11), one of the most striking features of the physiological action of chloroform on the mammalian is that it soon (10 to 20 seconds) causes a marked fall in blood pressure. Consequently when a lesion is about to be extirpated, and there is reason to expect considerable oozing, or when the brain is obviously turgid with congestion, I always ask that the chloroform percentage should be raised for, say, a quarter to half a minute to 1 or 2 per cent. This at once induces a convenient, proportionate, and, of course, temporary anæmia.

The consideration of capillary oozing and hæmorrhage brings us logically to the question of bleeding from the venous system, because capillary oozing is so dependent on the venous pressure. The same steps, therefore, which diminish the latter will also reduce the former.

Veins.—All bleeding from the veins and sinuses in bone can be immediately and absolutely certainly arrested by plugging with wax if the periosteum round the hole is completely removed. No difficulty, therefore, should ever arise from hæmorrhage from this cause. It is otherwise with wounds of the sinuses and Pacchionian bodies and venous lakes in the dura mater. The bleeding from these, however, no matter how severe, is immediately controlled by pressure with the point of an instrument, while the opening is closed by a fine lateral suture on a round needle in the usual way. The principal veins if necessary are, of course, ligatured like arteries by passing a round needle beneath them, and there only remains, therefore, for consideration the control and arrest of venous oozing.

CONTROL OF VENOUS AND CAPILLARY OOZING BY THE USE OF OXYGEN.

Venous bleeding as just stated, commonly occurs in association with capillary oozing, and is often very troublesome in spinal as well as in intracranial operations, especially those at the base of the skull.

This can be rapidly controlled by a simple manœuvre, namely, the inhalation of oxygen. It is not necessary here, nor have I the opportunity or time to discuss why during the administration of chloroform there is gradually induced a moderate degree of asphyxia which has the effect of raising the venous pressure. The fact is plain, and consequently all that has to be done to lower the venous pressure and stop the oozing is to get rid of the asphyxial condition. Though it is impossible to promptly improve the action of the respiratory centre itself directly or the respiratory movements of the patient and so lower the venous pressure, it is easy to raise the percentage of oxygen in the anæsthetic atmosphere breathed, by directing a stream of the gas through the air inlet of the Harcourt regulator, and so quickly abolish any asphyxia.*

It is interesting to see how rapidly the bleeding stops as the colour of the oozing blood changes from dark purple to a bright scarlet. I frequently, therefore, during operation, especially towards the end, request the anæsthetist to turn on the oxygen for this purpose as well as for the elimination of shock (*vide inf.*) It of course must not be forgotten that as the gas is delivered through the Harcourt tap at a pressure somewhat greater than the patient's own respiratory current passing through the chloroform bottle, the in-draught of chloroform air (and therefore the total percentage of chloroform) is somewhat diminished, but this is of no practical consequence, especially at that stage of the operation.

SHOCK.

I now come to the analysis of the Queen Square cases, and shall endeavour as far as possible to thereby throw light on the actual cause of death occurring within the first twenty-four to forty-eight hours after the operation—that is, from what is termed “shock.”

The question is one of profound interest, for since shock or sepsis are practically the only causes of death which can be provided against, the answer to it lies at the root of successful prognosis as well as of further improvement in surgical technique.

A few prefatory words are necessary as to what is meant by “shock.” I quite agree with Crile, who has done so much to elucidate this all-important question, that we should discriminate between shock and collapse: and that while collapse is a temporary accident, in which the patient's nerve centres are capable of being revived by ordinary clinical means, shock, on the other hand, is a post-operative condition, which deepens after the operation for a variable period, and which if it ter-

*I may here add that Bayliss and Starling found in their experiments on animals that warming the respired air diminishes the effects of operative shock. This can easily be done by passing the oxygen through a hot coil.

minutes fatally, destroys life, as a rule, within twenty-four hours. It is this dangerous phenomenon which we must now discuss.

From observation of the condition of patients after all kinds of operations it is evident that the phenomena of dangerous shock differ according to the part of the body operated upon, according to the condition of the patient before the operation, the concurrence of accidental hæmorrhage, etc. The alteration of the intracranial tension which is produced by opening the skull, of itself necessarily causes shock after encephalic operations in a manner which is somewhat different from that caused by other operations. Therefore I think its treatment must also be different. The nervous system is responsible for the maintenance of the respiration, the maintenance and control of the temperature of the body. Hence the only way in which we can adequately examine into the subject is by systematic discussion of these several points.

Fortunately the clinical investigation of the first—the alteration of the intracranial tension—has been rendered more easy by reason of the procedures adopted during the last thirteen years. In 1893, at the discussion in the Section of Surgery of this Association at Newcastle,⁴ I pointed out that the early statistics of intracranial operations showed that the majority of deaths occurred from a severe degree of shock which could be in great part avoided by dividing the operation into two stages, the interval between them being about five days.*

The first stage consisted of the opening of the skull, the second of opening the dura mater and removal of the lesion. On the same occasion I drew attention to the fact that although at the second stage the dura mater was opened, the removal of the tumour was often attended by relatively little shock. Subsequent experience has fully confirmed these statements, and shown that it is in fact the opening of the skull which causes most general depression of nerve energy and most alteration in the circulation.

METHOD OF OPENING THE SKULL.

I cannot spend time on the various mechanical devices for opening the skull, but as much of the shock depends on the way in which this is effected. I must allude to the principles which I believe govern the opening of the cranio-neural tube at any point. Of these the first is that as far as possible the bone should be divided with as little vertically applied force as possible, and removed with the least possible pressure on

* The advantage of systematic two-stage operations only properly applies in my opinion to encephalic cases, although I have used it in emergency in a spinal operation,—Cf. also Brodnitz, *Verhandlungen der deutschen Gesellschaft für Chirurgie*, 1905, p. 219.

the brain and dura beneath. After a long experience of saws, circular or straight, and trephines driven by electromotors, I find that the foregoing principle can be most quickly and readily fulfilled by first removing a trephine disc, then marking with a large saw the area to be removed, and finally cutting away the bone with large bone forceps, all traction being directed outwards. The ill effects of vertical pressure or force are particularly seen when the opening of the skull has been done osteoplastically with the use of the mallet and chisel, and as in very many cases it is not advisable to preserve the bony wall of the skull the chisel need be but rarely used.

ALTERATION OF INTRACRANIAL TENSION.

(a) *Influence of Region of Skull Opened.*

Having thus briefly dealt with the methods of opening the skull, I pass to the next practical question—the influence of the region opened. This introduces a very important point which was first raised by Duret some thirty years ago, and has attracted the attention of most surgeons who have more especially operated on the cerebellum. It is obvious that inasmuch as the nerve centres of organic representation are situated in the posterior fossa of the skull, opening this region might theoretically be expected to cause more shock symptoms than the opening of other parts. No statistics can give a dogmatic explanation of this or any other clinical matter, and in fact every case forming the material for our present statistical analysis in which death occurred from shock after the first stage (six of the total number of cases) was complicated by the pressure of the lesion being only partly diminished, while in two instances there was, in addition, persistent hemorrhagic oozing; but on taking all the cases together they give the following result, which is sufficiently demonstrative:

		Proportionate Ratio.	
"Motor area"	1	death in 27 operations	
Parietal and post-parietal regions	1	" 19	"
Frontal region	1	" 13	"
Temporal region	1	" 12	"
Cerebellar region	1	" 10	"

If, therefore, a line be drawn from the frontal eminences to the occipital protuberance, it is obvious that more shock results from operations below that line than from above, and also as we proceed from the frontal to the cerebellar pole of the encephalon.

Duret's conclusion was that pressure applied to the frontal regions especially produced lethal effect by direct transmission to the medulla

along an axis parallel to such a line, and I shall show how such mechanical effects can, as far as possible, be avoided during operations on the basal parts of the brain.

(b) PRODUCTION OF VON BERGMANN'S OEDEMA CEREBRI.

The surgery of the central nervous system has been enriched by many contributions that have been made to it by von Bergmann, but on no point more particularly than that of the causation and frequency of oedema of the nerve tissues (see especially his *Kopfverletzungen*, and, later, *Die chirurgische Behandlung der Hirnkrankheiten*, 1889, p. 118, *et seq.*) The readiness with which the cerebrum and cerebellum become oedematous is remarkable, but the circumstances under which it happens are not at all easy to understand, and the facts of a large series of cases do not fall into line with von Bergmann's generalization—namely, that oedema necessarily occurs whenever the skull is freely opened. Thus, after the second stage of an extirpation in which the skull has been very freely opened and a tumour removed, there may be only a very moderate degree of oedema of the hemisphere operated upon, which, like all traumatic oedema of the brain, arrives at its maximum in three or four days, and disappears without any complication. On the other hand, when the skull has been freely opened in the first stage and the dura mater left intact, if the pressure of the growth is considerable, that may be accentuated by the development of a markedly oedematous condition around the focus of pressure. It is, of course, quite comprehensible that this is owing to the fact that a slight relative increase of tension may unfavourably affect the walls of the cerebral blood vessels, which are still under compression, and bring about a Cohnheim effect. That this does occasionally occur is proved by the very rare phenomenon of transudation of the red blood corpuscles into the oedematous tissue, of which the following is an example, and as it is unique in my experience I quote it here:

The patient, a lady of 52 years of age, had had symptoms of cerebellar tumour for several years, and a varying degree of optic neuritis had been known to exist for more than two years. The case being referred to me, I opened the cerebellar region, and finding extreme tension, decided to relieve it by a small opening in the dura. This revealed a thin-walled simple cyst, which I punctured and removed. After a preliminary stage (three to four hours) of moderate shock, the patient gradually developed remarkable symptoms of deepening coma, Cheyne Stokes respiration, and a rising temperature. These symptoms terminated fatally in thirty-six hours from the operation. *Post-mortem* examination showed that the cyst was completely removed, and that

death had resulted from cedema, with punctiform extravasations, of the medulla and cerebellum.

Probably this unusual occurrence was partly determined by a moderate degree of arterial sclerosis which was also present, but had not the complication of cedema occurred no case could have been more satisfactory.

This question of cedema is in our experience clearly associated with the further question of unrelieved pressure, and this brings us to the all-important question of success in diagnosis and the much-discussed procedure which is called an exploratory operation. The statistics of Queen Square Hospital throw a good deal of light on this subject, and show that the former condition, namely unrelieved pressure, is a matter of great practical importance in respect of ordinary palliative operations performed to abolish optic neuritis and relieve the headache, in short, to the procedure to which Professor Cushing has recently given the name of "decompression" operations. I will take this point now. Thus, of 13 cases which died of shock after the second stage, in 7 by reason of failure of topographical diagnosis, the pressure was not relieved directly over the seat of the lesions, whereas in 6 cases in which a tumour of the brain was diagnosed and correctly localized, but in which removal was not attempted owing to the size of the growth and other reasons, no patient died.

A comparison of this kind is sufficient, I think, to warrant the statement that the risk of an operation for decompression is greater if the opening for the relief of pressure is not made directly over the lesion. Precisely the same point is borne out with even greater distinctness by the figures showing the relative risk of operating with and without a correct diagnosis. Thus, of 79 cases in which a correct diagnosis was made and the tumour successfully removed, 7 cases died of shock—a little over 8 per cent.; whereas in 16 cases of tumour which were incorrectly diagnosed and consequently not removed, 6 cases died from shock—approximately 37 per cent. It is, perhaps, worth while adding that practically in all these latter cases the tumour was a glioma or gliomatous sarcoma—that is to say, a diffuse growth the diagnosis of which is always the most obscure, and at the same time a form of neoplasm in which circulatory changes and cedema is always liable to occur.

I think that these data enable us to form a more or less correct estimate of the risk of an exploratory operation in cases of doubtful diagnosis.

TREATMENT OF SHOCK..

As I have suggested above, the treatment must be arranged according to the symptoms which threaten life, and those may be grouped accord-

ing as they affect (1) the respiration, (2) the circulation, (3) the body temperature.

Depression, or aberration of special nerve functions—for example, motion, sensation, etc.—need not be a source of anxiety, as, if the centres of organic life are restored, recovery of the others will certainly follow in proportion to the extent to which their representation has been preserved.

1. *Respiration*.—The embarrassment of the respiratory centre in a stage of shock shows itself in increasing degrees of severity as follows: (a) shallowness of the respiratory movement, (b) periodicity and grouping of the respiratory movements, (c) typical Cheyne Stokes respiration. These changes are best dealt with by inhalations of oxygen until the effect of nutrient enemata (*vid. inf.*) begins to make itself felt, but it is above all in depression of the respiratory centre that strychnine is of use in combating shock. In speaking thus favourably of strychnine I nevertheless agree with the elaborate and useful work of Dr. Crile on this subject, and believe that in many cases strychnine is used too empirically, too freely, or with undue reliance to its powers, and that in repeated doses it has a depressant action on the circulation. As a stimulant of the bulbo-spinal centres strychnine is of course unrivalled, when any marked alteration in the rhythm of the respiratory centres shows itself, a small dose should be given hypodermically, but for the above-mentioned reasons it does not seem advisable to give such a drug beforehand, as is sometimes done either immediately previous to the operation or at the end thereof, with the idea of anticipating difficulties resulting from shock. It is also not to be forgotten that the usual functional depression of the respiratory and the cardiac centres which immediately precede chloroform vomiting is particularly marked in these operations, and often causes unnecessary alarm.

2. *Circulation*.—In considering the depression of the circulation by shock, we must again express our indebtedness to Crile for having shown that this part of the subject is not merely a question of the central or cardiac maintenance of the blood pressure, but to a large extent the lack of influence of the vasomotor system. I think the beneficial effects of pressure on the surface of the body can be obtained by bandaging the limbs with cotton-wool. It remains, therefore, to consider what drug treatment is to be resorted to. As regards cardiac stimulation, that has always seemed to me to be a clinical error. The heart does not require accelerating as a rule, but it does require feeding. Undoubtedly repeated enemata (every two hours) of four ounces of beef-tea in which is dissolved Brand's essence or pancreatized milk is the readiest means of beginning to follow this line. If time presses, a very small dose of

atropine is useful, and in cases of peripheral vasomotor paralysis digitalis is also useful, but its use must be at once stopped if there is any acceleration of the pulse. It is, I believe, of universal experience that, compared to the foregoing drugs, alcohol is not worth mentioning, and as it has very definite depressant after-effects, I think its use is to be avoided. A small quantity of strong coffee gives all the psychic stimulation of alcohol without its depressant effects; and even if it be vomited within a few minutes, benefit results.

3. *Body Temperature.*—In a large majority of cases the body temperature is somewhat lowered, but in certain instances, notably in children, one of the shock effects of operation is the losing of heat control and consequently the temperature, instead of falling, rises from the moment the patient is returned to bed. This rise may in a child become hyperpyretically dangerous, but can, of course, be, as a rule, like all neurotic pyrexia, controlled by cold sponging the upper limbs.

In leaving the question of shock I desire to once more assert that the main principle of operating on the central nervous system should be the avoidance and prevention of all conditions which lead to shock—namely, cooling and mechanical disturbance of the central nervous system. In respect of the necessity of producing less disturbance or chance of pressure upon the brain beneath, Mr. Spencer found in my laboratory that even slight pressure on the surface of the hemisphere materially affects, in accordance with the principles of Duret, the activity and regular function of the respiratory centre. So, too, in the second stage all the necessary instrumental procedures must be effected with as little pressure upon the brain and nerve tissues as possible. Sponging, for instance, should be avoided unless absolutely requisite; and, indeed, the practice of hot irrigation renders it very unnecessary. In particular, during the separation and extraction of an encapsulated tumour—such as a large fibroma every attempt ought to be made to exert a leverage or traction, so that the direction of the force is always outwards.

These principles underlying the avoidance of shock having been fully discussed, we may turn to the question of septic infection.

ON SEPSIS.

So far I have said nothing about the second possible cause of death, namely, septic infection. Few things are more interesting in a review of general surgery as compared to the special branches of the subject than to see how essentially different in varying conditions is the incidence of sepsis. It had always been recognized, and long before Lord Lister's immortal discovery of antisepsis explained why, that the cavities

of the body presented special risks in this particular. Nowadays, when many surgeons can show an unbroken record of successful operations for the radical cure of hernia or for appendicitis in the cold stage, I believe it is not completely realized how very different should be our estimate of the proclivity of the central nervous system to invasion by septic micro-organisms and the extremely feeble degree of its resisting powers. A survey of the literature of the last ten years proves this most distinctly, numbers of cases of sepsis arising in the practice of the most careful operators even for such simple conditions as a benign isolated fibroma compressing the spinal cord. The records of Queen Square Hospital of the past twenty years are somewhat vitiated by accidental infections traceable to causes unconnected with the special region of the wound. Thus of the 17 cases in which death directly resulted from sepsis, one was due to the condition of the scalp before the operation, another to infection from the mouth, and two if not three from imperfect sterilization of the ligatures. Of the remainder, the infection in a very large majority obviously originated during the after-treatment of the case, while the external wound was still open at the drainage spot, especially when such openings and avenues of infection had been kept open by tampons and plugs. Personally I believe that the present-day precautions are sufficient at the time of operation, especially if the irrigation fluid used be a weak antiseptic lotion, that for the subsequent dressings it is essential to use an antiseptic (I have only complete confidence in a mercury salt), and that so long as the cerebro-spinal fluid continues to escape the most vigorous disinfection of the skin and frequent changing of the dressings must be carried out, for not only so long as the cerebro-spinal fluid is flowing is there great danger of septic invasion, but the difficulty of closing a drainage sinus is increased the longer the cerebro-spinal fluid passes through it.

In summary, I feel inclined to reassert the view expressed in 1886 that the less drainage is employed the better, and consequently that every effort should be made to close the skin wound as early as possible.

DISPLACEMENT OF THE BRAIN.

With these general considerations before us, there remains the discussion of particular procedures. One of the most important of these is displacement of the brain, which must be resorted to to reach tumours at the base. I mean displacement of the lobes or regions. My first attention to this subject was drawn by being requested in 1889 to operate on a tumour pressing on the front of the optic chiasma, and for this purpose I raised the frontal lobe, but found that the tumour was really a cystic adeno-sarcoma of the pituitary gland, and was inoperable. To

facilitate the elevation of the frontal lobe some of the veins entering the longitudinal sinus therefrom were ligatured. On the death of the patient some years later I found that there was some considerable softening of part of the frontal lobe in the area drained by these veins, and not directly implicated by the tumour. This and subsequent evidence referred to above led me to the following conclusions which I have repeatedly made use of and found of service, especially in 10 cases of operation on the pituitary body. The cerebral hemisphere is anchored by emissary veins to the dura mater at various points (see Figs. 10 and 3, Plate 4), (1) in the mesial plane, that is, to the longitudinal sinus; (2) laterally, chiefly by the temporo-sphenoidal vein to the lateral sinus opposite the asterion; (3) to a less degree by the external occipital vein, and (4) by the anterior temporo-sphenoidal vein, both of which last are small vessels, but being almost terminal require to be respected (see Fig. 9, Plate 4). The hemisphere can be readily compressed upwards by inserting a flat spatula cautiously beneath it (see Figs. 10 and 3, Plate 4) and between the veins just described. The next question, of course, is What happens to the hemisphere compressed? This entirely depends on the mode of compression. If the compression is, as it should be, gradual, the soft nerve tissues soon mould, with very little internal derangement; but it is easy to produce, with too much and too rapid application of pressure, laceration of and ecchymotic oozing between the fibres of the corona radiata. Such compression contusions of the basal portions of the hemisphere are relatively unimportant, because they relate to portions of the cortex of which the function is either readily compensated when lost or of very wide representation. The inspection of the deep parts of the skull by displacement of portions of the brain entails trouble to the assistant, because it is certainly disadvantageous to move the retractor when once properly in position. So far I have spoken of the cerebrum. I think that precisely the same principles should prevail in the case of the cerebellum.

With this procedure properly applied to the temporal lobe it is remarkable how much can be seen and correctly examined. With a good illumination the crura cerebri, the circle of Willis, the pituitary body and internal carotid, the second and third nerves come into view. I have in two cases after removal of a pituitary tumour inspected the base of the brain further by means of a small rhinoscopic mirror placed in the sella turcica; and it is very easy by continued but gentle pressure with a copper spatula, or with a spatula of suitable size, and with a strong headlight, to inspect the lateral region of the cerebellum and medulla oblongata with the issuing nerves (See Figs. 3 and 4, Plate 4). For these reasons I venture to take exception to the step of removing

portions and lobes of the encephalon if these impede the approach to the lesion.

THE VENTRICLES.

In this connexion, namely, procedures necessary for the examination of the deeper portions of the brain, a few moments must be devoted to the matter of exploration of the ventricles.

Considering that for 1,400 years (as we know historically) the lateral ventricles were looked upon as the most important part of the brain, inasmuch as the animal spirits, or, as we should now say, nerve energy, originated therein, it is not surprising to find that special danger was supposed to attend their opening or surgical interference. Undoubtedly their continued drainage exposes the patient to the particular risk of sepsis, but apart from this there is no reason why they should not be freely dealt with like other parts of the brain, opened and portions of their wall removed as the case may require, provided that one precaution is taken, namely, that blood is prevented from flowing into the ventricular cavity. This, of course, may be obviated at the time of operation by a simple plug, and when the removal of the lesion is completed a temporary tampon is left in for twenty-four hours, by which time all the oozing vessels are thrombosed. I may, perhaps, on this question draw attention again to my paper of 1893, because the case therein referred to of death by intraventricular filling was an instance of persistent oozing gradually forcing its way through the softened roof of the unopened ventricle.

PROCEDURES IN THE TREATMENT OF MALIGNANT DISEASE OF THE ENCEPHALON.

The analysis of the Queen Square cases also brings out in very strong relief the fact that where the technique of intracranial operations fails most is the treatment of malignant disease. This, therefore, will fitly form the last chapter of our considerations. All tumours which, growing from the meninges, penetrate the brain, or which are encapsulated, such as fibromata, myxomata, can all be excised with a good permanent result (see Figs. 15 and 16, Plate 4). The comparison between simple and malignant disease is well shown in the accompanying table of 53 tumours, cases in which the patients' histories have been followed up to date.

Queen Square Cases. Recurrence Table of 55 Tumours.

Glioma	19	}	23	Recurrence within 2 years, 20. 1 recurrence 3 years later; died of valvular heart disease, 7 alive well, longest 5 years.
Sarcoma	4			
Endothelioma.....			8	

Tuberculosis	4	{ 2 died within three months of tuberculous meningitis. 2 alive well, longest 7 years.
Gumma.....	8	
Fibroma	4	No recurrence.
Cysts	5	No recurrence.
Adenoma.....	{ Pituitary	} 1 recurrence.
Adeno-sarcoma		

But unfortunately a considerable proportion of cases of cerebral tumour are essentially malignant, and by reason of their diffusing through the nerve tissues are very difficult to deal with so as to produce a complete and radical cure. These are the gliomata or glio-sarcomata. One elementary point of difficulty arises from the fact that they not infrequently reach a considerable size before they produce sufficient symptoms to render a topographical diagnosis accurately possible. Further, pathological anatomy does not yet tell us how to classify these growths, or how to determine what is their exact point of origin, consequently it is very difficult to systematically attack their growing focus or plan correctly the complete extirpation of the infected tissues. Further, the regions of the brain surrounding the tumour are commonly cedematous, and this introduces a fresh difficulty—namely, to decide between the infiltration of the brain tissue with neoplastic growth and with simple œdema respectively. The Queen Square series of cases in the foregoing table show that recurrence of malignant disease was observed in no less than 20 out of 23 instances. I have on several occasions attempted, with but partial success, to obtain by extirpating such recurrences the same striking result as Bramann in his classical case, but undoubtedly the treatment of this class of disease will not be surgically satisfactory until the diagnosis is so far improved as to make it possible to remove the growth entirely with certainty in the first instance. I may quote a couple of cases illustrative of this:

Case I.—P. This patient, a man aged 62, sent to me by Dr. Sellers, of Preston, presented all the classical symptoms of a localized tumour of the right ascending frontal gyrus, namely, Jacksonian epilepsy, hand aura, slight hemiparesis, atropgnosis, etc., and optic neuritis limited to the upper nasal quadrant of the right disc. At the operation a small tumour, 5 cm. in length, was found, which commenced in the substance of the cortex and was spreading diffusely from that focus. Microscopically it proved to be a highly malignant glioma. The patient remains in good health.

Case II.—F. In this case the patient, a boy aged 8, presented fulminating symptoms of cerebellar tumour, intense optic neuritis, inability to stand, repeated cerebellar fits, marked nystagmus and localizing pressure symptoms enabling a diagnosis of right cerebellar lateral lobe lesion.

A glioma of about 8 cm. long axis was removed from this situation. The patient is in perfect health nearly four years after operation, and shows no symptoms of loss of cerebellar function, although the removal of the growth necessitated considerable contusion of the cerebellar hemisphere.

These cases make it clear that the successful treatment of glioma resolves itself into a question of early diagnosis: In this respect it seems to fall into line with the corresponding malignant tumours, for example, sarcomata of muscle and other soft vascular organs and tissues.

EFFECT OF DIRECTLY EXPOSING BUT NOT REMOVING GLIOMATA.

In 1890, that is, sixteen years ago, my attention was drawn to the remarkable progress of a case of glioma of the cerebrum which was referred to me by Dr. Buzzard for operation on the understanding that the operation should not be completed if the hemiplegia should be increased or made permanent. The tumour was found at the point diagnosed, but it was so large that obviously its extirpation would have been followed by some permanent paralysis. The wound was therefore closed and the patient made a good recovery. Two and a half years later he accidentally infected himself with erysipelas and died in another hospital. At the *post-mortem* examination it was found that the tumour had disappeared, leaving a cicatricial and degeneration cyst. Since then I have operated on 10 cases of similar nature, but not always defining the tumour itself. In all, however, classical symptoms were present, namely, double optic neuritis, headache, vomiting, and varying motor and sensory pareses, together with severe intracranial tension and bulging of the brain through the opening of the dura.

I may quote the two most recent of these cases: The first, a boy, admitted into University College Hospital, with left hemiplegia and Jacksonian epilepsy, optic neuritis, stupor and vomiting. At operation I found that at least the middle third of the cerebral hemisphere, principally the leg area, was involved in a dark red diffuse growth. Regarding it as inoperable I closed the wound, hoping that the tumour would undergo retrogression in accordance with the previous cases. This duly happened and the boy is growing, is bright and intelligent. Examined July 10th, 1906, two and three-quarter years since the operation, he seems to be normally healthy, except that there is a considerable degree of spastic hemiparesis of the left leg, and to a less degree of the arm. Occasionally he has cortical twitching of the left leg.

The second of these two cases is that of a medical practitioner, whom I saw in October, 1902, with all the symptoms of a rapidly-growing malignant tumour of the left lateral lobe of the cerebellum. As this

was apparently confirmed when I opened the skull and dura by the extreme turgescence and deep red colour of the cerebellum, I closed the wound considering that the original intention of palliation of the headache and neuritis was the only possible treatment. His recovery was however, so complete that in a few months he returned to his practice, which he has been carrying on ever since. Cases of this kind are clearly comparable to those which Dr. Glynn has published¹ of subacute encephalitis and internal hydrocephalus simulating cerebral tumours. It is however, of course, difficult to determine the parallelism between his series of cases and mine, as only in one was an operation performed—namely, by Mr. Thomas—but in that instance the relief of the cerebro-spinal fluid was followed by complete recovery.

I venture to think that we are justified in making the following general deduction on the question of the surgical treatment of malignant disease of the encephalon: (1) That operation should be resorted to as early as possible; (2) the tumour should be, if possible, freely exposed and examined and extirpated with surrounding tissue; (3) that if it cannot be removed without undue interference with important or essential structures there remains some possibility of the tumour undergoing retrogression in a certain number of cases.

CONCLUSION.

In bringing this discussion of but one set of cases to a close some explanation is, I think, due from me why I did not follow the customary course of accumulating the records of as many cases as possible from the literature and basing my deductions on that basis.

My reason is that the massing together of cases treated by different surgeons under different conditions of operative technique with different clinical histories has always seemed to me an unscientific proceeding.

The errors of clinical observation are so numerous that to arrive at correct conclusions we ought to exclude variations of condition as much as possible.

I have only now the very agreeable duty of rendering an acknowledgment of my sense of indebtedness to Dr. Grainger Stewart, the Pathologist to the National Hospital (Queen Square), who has with indefatigable industry worked out the clinical records of the cases on which this address is based.

REFERENCES.

¹Waller, *Brain*, vol. xix, p. 569, 1896.

²*Die chirurgische Behandlung der Hirnkrankheiten*, 1889, p. 116.

³*Transactions of the Obstetrical Society*, 1885-6, p. 53.

⁴*BRITISH MEDICAL JOURNAL*, December 23rd, 1893.

⁵*Ibid*, April 22nd, 1905.

AUTOMOBILE FRACTURE OF RADIUS.

BY

EDWARD ARCHIBALD, M.D.,

Assistant Surgeon, Royal Victoria Hospital.

Possibly, at the outset, one ought to explain the exact meaning of the appellation which is set down as the title of this communication. It is a name which belongs to the development of the automobile industry, and comes to us from France. A synonymous term, sometimes used is that of "Chauffeur's fracture."

Being on the look-out for the lesion from reading, but never having heard before of a case in Montreal, I fancied the condition might be equally unfamiliar to the members of the society, and, therefore, of sufficient interest to bring before them.

The patient was seen July 18, 1905, immediately after the accident, the mechanism of which was as described below. He thought he had sprained his wrist. Having reason to suspect a fracture on account of the fact that tenderness was localized a little above the joint-line, I had a skiagraph taken, which showed the fracture as seen in the accompanying tracing. There was not the least deformity, such as one gets in a Colles fracture. The result has been excellent under fixation, early massage and movements.

This fracture has been studied of late mainly by French surgeons, France being the home of the auto. Lucas-Championnière read a *mémoire* on the matter in the spring of 1904, and describes the mechanism of the fracture as follows:

"To start an automobile, the crank is turned several times until an explosion is produced. Now, it not infrequently occurs that, as the handle is being turned, a premature explosion takes place, the consequence of which is a sudden reversion of the rotation of the handle,—a sort of snap-back. Usually, the chauffeur lets go in time; but, if not, then the hand is carried with the handle violently backwards from right to left. The resulting damage may be anything from a sprain or a simple fissured fracture up to a total separation of the epiphysis, or even a tearing out of the joint leaving the skin intact. The larger the machine the more violent is the recoil."

The French put forward two theories to explain the mode of action. M. Dragon, who in 1902 showed six cases of this fracture, attributed it to the shock of the handle upon the heel of the hand, like a fall upon the outstretched palm—exactly as in Colles fracture. Lucas-Championnière thinks otherwise; there is no such shock, he maintains,

* Read before the Montreal Medical Society, —, 1905.

because the chauffeur has tight hold of the handle, and does not drop it; there is simply a turning back of the hand upon the forearm, a hyperextension of the wrist; as a result of which, the palmar ligaments exert a pull upon the lower end of the radius, and in this way break it a little above the articular surface.

In the present case you will see that it is only a triangular portion of the styloid process that is broken off; and I conceive this to be due to a combination of hyperextension and ulnar deflection, a hyperextension occurring while the hand was in ulnar deflection. When one turns a crank, the hand naturally assumes the position of ulnar deflection in order to gain power. This combined position would place strain not only on the palmar but also on the internal lateral ligaments; and it may be easily understood how the latter may pull off the triangle of bone from the styloid process, just as in Potts' fracture, the internal lateral ligaments pull off the tip of the internal malleolus.

The important practical point in connection with these automobile fractures is that they ordinarily cause no deformity; and particularly none resembling that of Colles' fracture, from which they are to be definitely distinguished. It is important therefore to remember that they may easily be overlooked, and be taken for a sprain.

In Colles's fracture the weight of the body drives the diaphysis of the radius into the epiphysis, and there is nearly always impaction. In chauffeur's fracture nothing of the kind! The fracture is by tearing—*par arrachement*—as the French say; naturally there is no impaction; and, as a matter of fact, usually no deformity of any kind.

The lesion is therefore a comparatively benign one. Moderate fixation, with early massage and passive movements give nearly always a good result.

Appended is a short bibliography:

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The seventh annual convention of the British Columbia Medical Association was held on August 1st and 2nd, at New Westminster. Dr. George E. Drew, of that city, presided. We notice the names of Dr. B. D. Gillies of Vancouver, and Dr. Hermann Robertson, Victoria, among the contributors, in a very varied and useful programme.

T H E

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No. 9

THE POWERS OF MEDICAL COUNCILS.

Of late many inuignant protests have come from the columns, editorial and otherwise, of the press, regarding the action of the discipline committee of a certain medical council which recommended that a physician be deprived of his right to practice because he had advertised a cure for *la grippe*. Apart from the fact that the newspapers object to any restrictions upon the rights of an individual to advertise, there fall one or two observations to be made upon the case.

When a physician finds a new remedy, if he is wise he remembers that the best man may err, and he expects that the virtues of it will be tried and thoroughly tested; if it be a real remedy, we venture to say that never yet has it failed because of a wider trial than one man can give it. We venture to say further that his priority of discovery will never be denied to him, since the fact of its publication to the profession is in black and white. If the remedy be no remedy, then it fails as it de-

serves, but the physician has at least the consolation of having tried, and only one who has never made a mistake or never failed will deny him the honour that is due to him for his efforts. But should a physician discover a remedy and keep it for the purpose of personal gain, so that the poor throughout the world are unable to have the benefit of it for the lack of a dollar, he becomes a merchant. There is nothing to be said against the merchant because he does not give away his wares broadcast, for it is a rule of trade that an article is worth its equivalent in money and is not given up until the equivalent or properly secured promise of it is assured. Therefore, let the physician become a merchant in name as well as in fact; the medical council says only this: "Be a merchant or whatever else you like, a member of our profession you no longer shall be." The profession granted him his position as a member of it; under proper evidence of this abuse of it, it seems to us but reasonable that it shall have the right to take it away. The medical profession does not take away from him the right to breathe or eat, but it does take away the right to be called one of themselves.

When a physician, so-called, promises to cure a disease, he puts himself upon a level with a rain-maker or a fortune teller, or any other such humbug, because he undertakes what he cannot be sure of performing; as with the rain-maker and the fortune teller, in a general way, the greater the promises, the less the actual performance. If a man declares he can cure a disease, he is either so ignorant of the limitations of his own powers as to be incompetent, or he is a liar; to declare his readiness to use his best ability and efforts to cure a disease is within the limits of a physician, and a sensible public has for years been ready to accept the services of the medical profession on this basis.

It might be useful to point to a specific instance. If the discoverer of diphtheria antitoxin had up to the present moment kept secret that wonderful remedy, how many children now alive, would have died because their parents had not the necessary dollars to purchase their lives. Should a cure for cancer be discovered, and kept for the personal gain of the discoverer, how many afflicted poor could curse with their last breath, such a niggard spirit! How many hundreds in Montreal this very day, have received what attention physicians can give them, without payment? Many! If then, the profession or their representatives declare that this is a well recognised part of the physicians work, a gift of time and labour that every physician must pay, then physicians must pay it or cease to have the rights of their profession, just as a householder must pay rent or leave his house. In this matter, the profession must be the judge, and the profession is the best judge, because the

public does not look at these matters in the same light. We leave other professions and all trades to rule their own households, and we ask leave to rule our own.

THE BRITISH MEDICAL ASSOCIATION.

We extend our hearty congratulations to our colleagues of Toronto upon the completion of their arduous work of the past year in preparation for the meeting just held, and on its culmination in a very successful and important session of that great body. The details involved in such a large undertaking are innumerable, and yet, with a neglect of any of these details, the penalty would be great; we, of Canada, have not often an opportunity of entertaining the British Medical Association, and on the rare occasions on which that privilege is ours, we cannot but feel that our country expects us to uphold her reputation before many visitors, some of whom gather their first impressions of Canada from this very source. We can take the position, temporarily, of outsiders, to commend the diligence and the hospitality of our brethren in Toronto, and to offer a tribute of appreciation to Dr. F. N. G. Starr, the secretary, who has proved so painstaking and so successful a secretary, the labour for many months has for him been incessant and arduous, and it is but right that the sacrifices of much strength, and even health in the service of the association should be acknowledged with gratitude.

The material contributed by Canadians, to the meetings and discussions has been found adequate, we trust; the many valuable contributions made by our visitors from Great Britain and the United States we have enjoyed and shall profit by, and we extend them our thanks, and our earnest hopes that they have been repaid, in some degree, for the outlay of their time and work.

Reviews and Notices of Books.

CARR'S PEDIATRICS. The Practice of Pediatrics by Eminent Authorities. Edited by WALTER LESTER CARR, M.D., Consulting Physician to the French Hospital; Visiting Physician to the Infants' and Children's Hospital, New York. In one very handsome octavo volume of 1014 pages, with 199 engravings and 32 full page plates in colors and monochrome. Cloth, \$6.00, *net*; leather, \$7.00,

net; half morocco, \$8.00, *net*. Lea Brothers & Co., publishers, Philadelphia and New York, 1906.

This large volume is compiled under the editorship of Dr. W. L. Carr, from the contributions of fourteen clinicians of the United States and England; these are Abt, Bovaird, Crandall, Dade, Davis, Jennings, McCarthy, Nicoll, Poynton (London), Riviere (London), Ruhräh, Southworth, Tuttle and Yale.

It is difficult to point out in a short review the particular points that one notes as worthy of mention, for these are many. The book is a kind of treatise on general medicine adapted to the diseases of children, and this is no dispraise, because care has evidently been taken to make it a thorough book of reference for the practitioner with a view of laying stress only upon these ailments met with in children. There is commendable terseness throughout, as is, indeed, necessary when one considers the huge amount of ground covered; a certain degree of dogmatic assertion varying with the personality of the individual writer is to be found, as might be expected; and as the book is really a practitioner's book, this is a desirable thing; equally good is it, that debate upon questions is, as far as possible, avoided.

Section I is upon Diseases and Injuries of the New Born. Section II upon the Development, Growth and Hygiene. Section III upon Infant Feeding, takes up, for example, maternal feeding, weaning, cow's milk, substitute infant feeding, and feeding after the first year, and it must be said that these are dealt with in a thoroughly practical way. Speaking for himself, the reviewer has found here some good, new information, and many old facts stated in a readily assimilable form. Diseases of the Alimentary Tract, and Diseases of Nutrition follow. The infectious diseases are dealt with at considerable length, are well illustrated, and, we think, quite adequately treated. At times, it is true, there are points upon which one may differ with the author, but in general these are points of fair combat. Dr. Poynton is admirable in the modesty with which he keeps in the background his beliefs on the causation of rheumatism, and has written a very good series of articles upon the heart. With reference to paracentesis of the pericardium, is it not time that writers began to discountenance its use? The reviewer has never seen a thoroughly successful puncture made, is afraid to attempt it himself, and knows of many other physicians who think with him. Why not relegate it finally to the surgeon and advocate the open operation or none at all? Returning to the subject in hand, Dr. Ruhräh deals with the blood, lymphatics and

glands; Dr. McCarthy with the difficult field of the nervous system, where he has many successful illustrations; Dr. Dade's chapter on skin diseases follows. From a first somewhat hurried perusal, the book pleases much, and can be strongly recommended.

SECOND ANNUAL REPORT OF THE PHIPPS INSTITUTE FOR THE STUDY,
TREATMENT AND PREVENTION OF TUBERCULOSIS. February 1,
1904 to February 1, 1905.

A volume of 450 pages contains this report, and it is a notably painstaking record of medical work, from many different standpoints. Nearly a thousand new cases were admitted to the dispensary, and nearly two hundred to the hospital during the year. In the first part, reporting the work for the year, careful statistical tables tell regarding all the patients exactly what happened, when it happened and how often; this is followed by an autopsy report of the 143 cases done during the year. Special reports on laryngological and neurological work follow. There is a short article on The Mental Attitude in Phthisis, in which the writer gives as his experience that the phthisic hopefulness is rare.

A long and full study of the kidneys in tuberculosis follows, in which it is shown that tubercles occurred in the kidneys in 58 per cent. of the cases; parenchymatous nephritis was most commonly found, although clinically albumen was not the rule, nor was œdema. The writer's view is that the most safe clinical signs are casts and tubercle bacilli in the urine. The heart and the liver are next dealt with, and a report on pneumothorax which occurred with a frequency of 9 per cent. in the autopsies. Dr. Ravenel reports on Maragliano's serum, hopefully, but not enthusiastically, and does not give an opinion upon the value of Marmorck's serum, the preparation and application of which he describes. Pearson writes at considerable length on the Immunization of Animals against tuberculosis, and the Appendix contains *fac-similes* of the forms, charts, rules, etc., in use in the Institute.

This is more than a report; it is a book of reference, and contains a great deal of scientific fact about tuberculosis in a thoroughly available form.

INDEX CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL U. S.
ARMY. Washington: Government Printing Office, 1906.

The present volume, the eleventh of the second series, contains nearly nine hundred pages, covering titles from Mo to Nyström. The volume contains over 8,000 author-titles, and we notice that the library now contains 155,402 volumes, and over a quarter of a million pamphlets.

PROGRESSIVE MEDICINE, Vol. II, June, 1906. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, 368 pages, 31 illustrations. Per annum, in four cloth-bound volumes, \$9.00; in paper binding, \$6.00; carriage paid to any address. Lea Brothers & Co., publishers, Philadelphia and New York.

The present volume of Progressive Medicine opens with a good article on Hernia, by W. B. Coley, which contains an account of the year's advances. E. M. Foote, M.D., follows with an article on Surgery of the Abdomen, excluding hernia; an extremely interesting lot of material is aggregated here, upon a great variety of subjects.

The section of Gynæcology is by J. G. Clark, and carcinoma of the uterus is discussed at some length, with a plea for early recognition and the widest possible removal. Dr. Alfred Stengel writes upon the blood, the spleen, thyroid gland and lymphatics, and allied subjects. Diabetes, Gout, Hæmophilia and Hodgkin's disease are also treated. Dr. E. Jackson contributes the section on Ophthalmology. The volume is quite equal to its useful predecessors.

INTERNATIONAL CLINICS. Edited by A. O. J. KELLY, A.M., M.D., Philadelphia, U.S.A. Vol. II, Sixteenth Series, 1906. Philadelphia and London: J. B. Lippincott Company.

The present volume maintains the high standard set in this publication; it consists of twenty-five articles upon various subjects, which are mostly written with a view to a concise presentation of treatment. The illustrations of Rodman's article on tumours of the breast are very good, as are also those upon perineal repair in the article by Dorland. Some good X-rays of fractures are also presented. That these articles are particularized does not reflect upon those not mentioned, for, taken all through, they form a most interesting and instructive series.

PHLEBITIS AND THROMBOSIS. The Hunterian lectures, 1906. By WARRINGTON HAWARD, F.R.C.S., Eng., Consulting surgeon to St. George's Hospital, London. Bailliere, Tindall and Cox, London, 1906. Canadian agents, J. A. Carveth & Co., Toronto. Price, \$1.50.

The three lectures delivered before the Royal College of Surgeons by Mr. Haward form a most interesting resumé of our knowledge of these conditions; without there being anything distinctly new, there is a concise, yet ample discussion of the causes and form of thrombosis, with good

reference to the literature of the day and much material of interest drawn from post-mortem sources. Pulmonary embolism and thrombosis form a section of interest, and the lecture closes with some useful remarks upon the treatment of thrombophlebitis. The references given in foot notes are copious and indicate the thoroughness with which Mr. Haward has pursued his subject.

Medical News.

THE ROYAL VICTORIA HOSPITAL.

Monthly report for July:—Patients admitted during month, 286; patients discharged during month, 289; patients died during month, 11. Admittances—medical, 87; surgical, 120; ophthalmological, 23; gynaecological, 35; laryngological, 21. Out-Door Department—medical, 877; surgical, 650; nose and throat, 370; eye and ear, 252; diseases of women, 102.

The following Montreal physicians and surgeons contributed papers at the British Medical Association meeting at Toronto:—Dr. Ridley MacKenzie, Dr. C. L. A. Reed, Dr. J. C. Cameron, Dr. D. J. Evans, Dr. H. L. Reddy, Dr. Wm. Gardner, Dr. J. R. Goodall, Dr. J. W. Stirling, Dr. W. G. M. Byers, Dr. A. D. Blackader, Dr. L. Gilday, Professor Adami, Dr. Klotz, Dr. J. Ballah, Prof. Wesley Mills, Dr. W. S. Morrow, Dr. Burgess, Dr. Geo. Armstrong and Dr. Francis J. Shepherd.

The New Brunswick Medical Society at the annual meeting in Fredericton elected the following officers for the ensuing year:—President, Dr. Stewart Skinner, St. John; Vice-Presidents—Dr. Bridges, Fredericton; Dr. Main, Edmunston; Secretary—Dr. Day, St. John; Treasurer—Dr. Melvin, St. John; Corresponding Secretary—Dr. Nugent, Briggs Corner; Trustees—Drs. Deacon, Milltown; Purdy, Moncton; McNally, Fredericton.

The officers of the Northern Alberta Medical Association for the ensuing year are: Hon. president, Dr. Braithwaite; president, Dr. Whitelaw; first vice-president, Dr. Green; second vice-president, Dr. Harwood; secretary, Dr. Dunn; committee, Drs. W. D. Smith, Ternan and May.

A Medical Association has been formed of physicians of the County of Nicolet, of which Dr. H. Veilleux, Ste. Gertrude, is president, and Dr. L. S. Giroux, Gentilly, secretary.

The three days meeting of the American Orthopædic Association was held at Toronto on August 20, 21 and 22, preceding the meeting of the British Medical Association.

Dr. G. W. Ross, formerly of Toronto, now of London, England, has been admitted to the Membership of the Royal College of Physicians.

The fifty-third annual meeting of the Nova Scotia Medical Association was held early in July at Lunenburg.

Dr. C. Stephen Davis, of Walpris Bay, New Zealand, was one of the visitors from a distance to the British Medical Association.

Dr. Vanderlip, lately of the Toronto Home for Incurables, has begun practice in Newfoundland.

Dr. W. K. Colbeck is retiring from practice at Grand Valley, Ont.

Dr. Geo. E. Wilson, of Palmerston, Ont., was married early in July to Miss Bessie Pearson.

Dr. R. J. Crawford, of Winnipeg, who has practised at Winnipeg for fourteen years, is leaving the profession of medicine to enter industrial life.

Dr. Ault, of Calgary, was married on August 15, to Miss Ada Gentles, of Kincardine, Ont.

Dr. L. A. Moreau, was married on August 14, to Miss Aline Trudeau, at St. Johns, Que.

Dr. Daniel Day-Smith was married on August 15, to Miss Avesa Raycroft, of Hamilton, Ont.

Dr. Walter G. Thompson, of Hamilton, was married at Toronto, on June 30th, to Miss Edith McArthur.

Dr. S. Hanford McKee of Dorchester Street, was married on August 19th, to Miss Shirley Cowan of Gananoque, Ont.

Dr. G. A. Woodruff, Nesbitt, Man., was married on June 27th to Miss Lottie McCurdy, of Nesbitt.

Dr. Charles MacDonald, of St. Stephen, N.B., formerly of Milltown, N.B., died suddenly on July 17th. He graduated from McGill University a few years ago, and was in his 29th year. He was married, and recently was in charge of the hospital at Eagle Lake, Maine.

Dr. Ezra Bemiss, formerly of Welland County, Ont., died on July 11th, in Newark, N.J., of heart disease. He studied at Toronto University, and graduated from a New York college.

Dr. W. A. McIntosh, a graduate of Toronto University, died on July 18th at Toronto, in his 29th year. He had practised in Deer Creek, Minnesota, and had recently suffered from blood poisoning.

Dr. J. W. Slavin, Drillia, died on the 11th of July, at the age of 71 years.

Dr. Emmett Hughes, of Ottawa, died on July 2nd, of peritonitis.

Retrospect of Current Literature.

OBSTETRICS.

UNDER THE CHARGE OF J. C. CAMERON AND D. J. EVANS.

ZWIEFEL, P. "Die subkutane Symphysiotomie." *Zeit. für Gyn.* No. 26, 1906.

The development of operations having the object of increasing the pelvic capacity has made considerable advance recently. In this connection may be mentioned the pubiotomy operation of Gigli, and its improvement under the name of "hebotomie" by Döderlein, who does away with the large incisions, practically doing the operation by the subcutaneous method. The development of hæmatoma after subcutaneous section of the pubic bone in cases of pelvic contraction, has led the author to study the question as to their origin. The usual explanation is that the hæmorrhage is the result of wounding of the cavernous body of the clitoris. The author has had occasion to make a free incision in two of his cases, in order to ascertain where the hæmorrhage had origin: in both he found the internal pubic artery which lies on the inner side of the pubic bone behind the crura clitoridis divided. On the anterior and posterior surface of the pubic bone anastomoses of the obturator artery form a net work which must be injured in the course of sawing through the bone. He states that in no case of fifty-one symphysiotomies which he has performed had a hæmatoma formed, in spite of the fact that the corpora cavernosa were frequently torn through or punctured. He points out that the internal pubic artery can be pushed out of the way if the periosteum is lifted, before the saw is passed behind the bone.

He suggests in this article that the symphysis be opened by sawing through the interosseous cartilage, previously making a nick or incision on the dorsal surface, which, being convex, may otherwise cause the saw to slip to one side. Briefly, the author's method consists in an

incision at the superior border of the symphysis in the middle line. The finger is passed down through this incision, pushing the tissue out of the road, and the posterior wall of the interosseous cartilage nicked by means of a knife. A curved needle is then inserted above the sheath of the clitoris close under the symphysis and guided upwards to the superior border of the bone, where the saw is connected with it, and the needle withdrawn. During this procedure the urethra may be held to one side by means of a catheter. Three or four movements of the saw are sufficient to cut through the cartilage. As a rule, after separation of the symphysis spontaneous delivery is awaited. The advantage claimed by the author for this method of operation is the avoidance of arterial vessels and its freedom from hæmorrhage.

He reports in detail three cases of successful operation. The idea that the cartilage does not heal as well as bone is, he thinks, unlikely, from his experience. He then discusses the objections of Gigli and Henckel to opening the symphysis because it is a joint; and agrees with Stoeckel that this position is untenable, as there exists no synovial membranes or synovial fluid in connection with the so-called joint. In conclusion, he thinks that in the case of pubiotomy, the enlargement of the pelvic girdle, obtained thus by symphysiotomy, is permanent and subsequent births may occur spontaneously.

JARDINE, ROBERT, M.D. I.—“Eclampsia during Pregnancy; Death from Suppression of Urine; Extensive Infarction of both Kidneys.”

II.—“Eclampsia during and after Labour; Recovery after upwards of 200 Fits.” *Jour. Obstet. and Gyn. Brit. Emp.*, July, 1906.

Two interesting and unusual cases of eclampsia are recorded by Dr. Jardine. The first, a VII-para, æt 36, seven months pregnant, was admitted to the Glasgow Maternity Hospital suffering from fits. The usual premonitory symptoms had been present the day before admission. Venesection and transfusion of 2 pints of saline, followed by washing out the stomach, administration oz. 2 of Epsom salts, colon irrigation and hot packs were immediately employed. Within a few hours reaction took place and the next day the patient passed 35 oz. of urine containing a small quantity of albumen and over 1½ per cent. of urea, though there were granular casts, but no blood present.

The next day she was delivered of a seven months fetus, presenting the breech. The after-coming head was gripped by the cervix and chloroform had to be given to get it through. Vomiting began shortly after delivery and persisted for some hours, and but very little urine was passed, this showing a very small quantity of albumen and 1¾ per cent. of urea.

The following day the patient had a fit, and no urine was excreted. The temperature was normal and the pulse varied from 100 to 120.

The next day the patient vomited a dark material, but took 32 ozs. of milk by mouth. Saline was infused and she was cupped and poulticed over the kidneys, and hot packs were employed. Croton oil acted freely on the bowels. The patient seemed bright. Temperature was 99, pulse 90.

The following day there was a slight jaundice. The mental condition was good and appetite was present. Pilocarpine hypodermically resulted in profuse sweating. About $\frac{1}{2}$ oz. of urine was obtained by catheter; there was only a trace of albumen in it. The treatment was continued.

The next day the jaundice was most marked. The sweating was profuse, but no urine was secreted. The pulse was 80 to 90.

The following day the right kidney was cut down upon, the capsule stripped and the kidney was incised for a short distance. The patient stood the operation well, but during the day her pulse failed. She complained of abdominal pain, became very restless, but there were no convulsions. She died ten hours after the operation just about five and a half days after the commencement of the suppression of urine.

The general interest of the post-mortem is centred in the kidneys which were markedly abnormal. The liver presented moderate fatty changes. The kidneys were somewhat larger than normal, and were rather congested. A large portion of the cortex, over practically the whole surface of the organ and in between the pyramids was the seat of very profuse changes, apparently of the nature of infarction. "At all points there appears to be a layer of normal cortex next the medulla, but the outer parts of the cortex, forming from one to two thirds of the whole, are sharply demarcated from this by a zone of intense congestion with extravasation of blood." The infarcted tissue presented the usual dull, opaque, yellow appearance, with congested and hæmorrhagic margins. There was no thrombosis or endarteritis. Microscopically, the infarction was found of a fairly recent character. The condition of infarction is associated with widespread thrombosis, which was confined to the smaller blood vessels of the cortex. No embolisms were recognized. No micro-organisms were found in the necrosed tissues.

Dr. Jardine has recorded two other cases in which the conditions were almost the same. Both of them were associated with prolonged suppression of the urine without marked uræmic symptoms. He compares these with other cases of suppression of urine without this necrosed condition in the kidneys, in which the suppression was associated

with definite uræmic manifestations. He has no satisfactory theory to advance.

With regard to the second case, a IV-para, at 30, at full term, the general interest centers in the large number of fits, a total of 207, 199 during the puerperium, and 8 before delivery. She was admitted after having had some 7 fits in the course of a day and a half. She was under the influence of alcohol, was dazed and stupid. Her pulse was 100, and her temperature was 99.5. The vertex presented, and the os uteri admitted one finger. The urine contained a cloud of albumen with some epithelial cells, but no casts. The usual treatment of saline transfusion and salts, with hot packs resulted in a good reaction. Two days after admission she passed 50 oz. of urine, the albumen having reduced in amount. Delivery occurred spontaneously, and twenty-four hours succeeding it the patient passed 110 oz. of urine. Forty-eight hours after delivery, having previously complained of headache, she developed a fit, which was followed afterwards by two others. In spite of very active treatment, such as gr. $\frac{1}{2}$ of morphia, followed in two hours by gr. $\frac{1}{4}$, which caused the respiration to fall to 10 per minute, the convulsions continued to occur every ten or fifteen minutes. The pulse and bladder acted freely, and the patient was twice bled, but the fits were not controlled. Lumbar puncture was next carried out but nothing was developed, the culture proving sterile. Later on in the same day lumbar puncture was again performed and gr. $\frac{1}{2}$ of cocaine injected, which seemed to quiet the patient a little, but the fits had not diminished in frequency till eight hours later, when improvement set in. Feeding was carried out by means of a stomach tube and was confined to peptonized milk. Strychnine and brandy were used as was indicated. Urine was secreted in which the albumen was 2 per thousand (Esbach). The temperature for the first two or three days was elevated.

In all the case persisted for ten days. The fits were nearly all severe. The coma between them was not profound. The complete recovery which followed shows that there could not have been any brain lesion nor was the patient an epileptic.

In comment on the case the author refers to the energetic treatment, to the failure of the saline transfusion, and particularly of the morphia. With regard to the lumbar puncture and the injection of cocaine, while it seemed to soothe the patient and her recovery may have been due to it, he feels it is impossible to definitely hold this opinion. He believes that the extreme activity of the kidneys and the good condition of the heart were what carried her through. Good nursing, he thinks, largely contributed to the satisfactory result.

D. J. E.

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THE PATHOLOGICAL SECTION OF THE BRITISH MEDICAL
ASSOCIATION.

Professor Ramsay Wright's large lecture room was none too large for the Pathological Section which, like the other sections at this meeting enjoyed an attendance far in excess of what is usual — only upon the last morning, whether through carelessness or oversight on the part of those responsible, whereby the programme of the previous day was given in the daily journal, did the attendance become meagre, and some of the most valuable communications made to this section, those upon pathogenic protozoa, were given to an audience altogether incommensurate with their interest. The same may be said with regard to the communications offered. Although an extra session was afforded, the work of the section beginning on the Tuesday and not on the Wednesday, the time afforded was inadequate for the proper presentation and discussion of the papers, and this, even when certain papers offered to the section were given over to other sections for delivery there.

The main features were the three discussions, the first (along with the physiological section) upon the Physiology of the Nucleus, the others upon Malignant Growths and Arterio-sclerosis.

Professor Adami opened the first of these with an address upon the "Dominance of the Nucleus," which we hope shortly to publish, as stated by him. There has been no more important series of biological studies made in Canada than those published in succession during the last fifteen years by Professor A. B. Macallum and his pupils upon the histology and micro-chemistry of the nucleus. That this subject should be brought forward in Toronto was therefore most fitting. The discussion should bring home to medical men the rapidly growing recognition of the controlling part played by the nucleus in the cell economy.

The pity is that so large is the subject that in the few minutes given to those who succeeded the opener, Professor Macallum, Dr. Gustav Mann, Professor Carlier of Birmingham, and Dr. Roaf of Liverpool, could enter into no extended criticism of the opening address.

The discussion upon malignant growths was opened by Dr. Clowes of Buffalo. It is to the Buffalo Laboratory, and more especially to Dr. Clowes that we owe the first studies upon two remarkable outcomes of experimental cancer in mice, namely, the spontaneous disappearance of the cancerous new growth in a small percentage of the animals after having attained a certain size, and the fact that animals showing such disappearances are immune to subsequent implantation of mouse cancer. It may be remarked that Professor Ehrlich has since confirmed and explained these observations. The last annual report of the Imperial Cancer Research Fund in London, published a few weeks ago, most unfortunately announced that Dr. Bashford and his staff had reached like conclusions, without a single reference to the prior work of Gaylord and Clowes and Ehrlich. From that report, it might be concluded that Dr. Bashford had been the first to recognize this acquired immunity against malignant growths. Dr. Clowes in his speech opening the discussion objected most strongly to this tacit assumption of priority, pointing out that Dr. Bashford had called his earlier results in question, suggesting that what he regarded as disappearing tumours were only inflammatory foci, and that, now, without a word of retractation he had confirmed if, indeed, he had not appropriated the earlier work. Dr. Bashford in following upon Dr. Clowes could but apologize for his failure to recognize the earlier works and thus the incident passed over. He contributed a thoughtful address upon the factors influencing the media of malignant growths and was followed by Dr. Gaylord with a very remarkable study of an enzootic of cancer, if it may be so expressed, affecting the mice of a certain dealer in Springfield, Ill., in which the animals which had been housed in a certain cage tended to show malignant growths, even after different stocks were placed in the cage and when the cage was removed to different localities. Another valuable contribution to the discussion was Professor Warthin's demonstration of sections from various conditions of Hodgkin's disease, Leukæmia and Lympho-sarcoma, tending to the conclusion that all are but different grades of a neoplastic process, so that all might be included under the heading of Leucoblastema.

There was a full attendance at the discussion upon Arterio-sclerosis, opened by Professor Welch, who, while accepting Jore's conclusion that the commonest type of arterio-sclerosis is one characterized by a

preliminary overgrowth of the deepest layer of the intima, with splitting of the internal elastic lamina, was not prepared to accept the dictum of that authority that this form is to be regarded as alone arterio-sclerosis. With Dr. Klotz, who followed him, he pointed out that clinical arterio-sclerosis, the form recognized by the hardening of the radials, is of a wholly different type, a type characterized by primary changes in the media. This, the so-called Moenkeberg type, he would also include in his classification. He proceeded to consider in succession the other conditions of arterial change: proliferative endarteritis, syphilitic mesaortitis, etc., which have been differentiated within recent years, and showed in a most interesting manner how from gross and histological changes we are learning to distinguish certain well defined forms of sclerosis.

Following upon this consideration of the classification of arterio-sclerotic conditions Dr. Klotz, of Montreal, took up the subject of the experimental products of arterio-sclerosis, basing himself largely upon his own important studies of the past three years. His main conclusions were (1) that the changes produced in the rabbit by treatment with adrenalin, barium chloride and digitalis are in all essentials identical with the Moenkeberg type of sclerosis seen in the middle sized arteries in man, and he exhibited a series of aortas of rabbits, and femorals and iliac arteries from man showing this correspondence; (2) that while diphtheria toxine causes the same type of disturbance in the rabbit, typhoid and streptococcic toxines and dead cultures of these organisms induce in that animal a primary overgrowth of the intima, a form of endarteritis proliferans. This, so far as we knew, is a new fact, and demonstrates the existence of at least two types of sclerotic change in animals of the laboratory; (3) his observations led him to the conclusion that it was not the high pressure alone that caused the sclerotic changes in adrenalin animals, but that there was in addition a toxic action of this drug upon muscle elements.

Dr. Pearce of Albany, who also has studied extensively experimental arterio-sclerosis, while agreeing in the main with Dr. Klotz, was of the opinion that the degenerative changes in the media are not so much due to a direct intoxication, but are secondary to an ischæmia brought about by the action of adrenalin and allied drugs upon the arterioles and vasa vasorum.

Professor Aschoff of Marburg, laid stress upon the histological variations in the aorta, and its visceral and other branches, suggesting that one and the same cause acting upon arteries of different structure induces distinct varieties of lesions, implying thus that certain at least

of the different types of arterio-sclerosis have a like origin. Other contributors to the discussion were Professor Clifford Allbutt and Dr. Adami, the former holding in connection with certain remarks of Professors Welch and Aschoff, that modern pathologists were perhaps inclined to recognize too freely compensatory and adaptive changes, the latter pointing out that pathological processes as distinct from primary injuries to the tissues must be regarded as reactive and characteristically adaptive, and that the remarkable changes in the intima which succeed medial degeneration cannot be regarded as inflammatory, but are exquisite examples of adaptation. He was of the opinion that experiments of a less severe type conducted over a longer period might demonstrate that the Jores' and the Mönkeberg types of sclerosis are reactions to different intensities of the same noxa, and thought that certain observations recorded by Pearce tended to favour this view.

It is not possible to epitomize here the numerous individual papers contributed to this section. These may be noted in series. In what may be termed the antitoxin group, note may be made of the discussion between Pearce and Jackson of Albany on the one hand, and Beebe and Ewing of New York on the other, regarding the production or non-production of specific cytotoxins following upon the injection of nucleoproteids; as also of Ford of Baltimore, (late Fellow in Pathology at McGill), upon the production of an antitoxin for poisonous mushrooms. The poison in question was shown to be a glucoside and the antitoxin produced by Ford is the first successful production of an antitoxin to this class of poisons.

Two papers not wholly consonant were contributed by F. J. Smith of the London Hospital, and Türk of Chicago, upon gastric erosions and peptic ulcers, the former calling attention to the relationship of gastric erosions to inflammatory hyperplasia of the submucous lymph nodes, the latter affording evidence that long continued feeding with or injections of cultures of *B. coli* of low virulence result in the production of both gastric and duodenal ulcers. While judging from his admirable photographs Türk has succeeded in producing well marked ulcers, his explanation of how the *coli* bacillus and its toxins set up these ulcers is largely hypothetical.

Turning to tropical disease Professor Hewlett read for himself and Dr. DeKorte an interesting note upon a disease simulating Beri-Beri, occurring in a batch of monkeys, and that in such a way as to suggest strongly an infective origin with acute gastro-intestinal onset. Dr. Hamilton Wright brought forward further cases in man favouring his contention that there is an acute gastro-duodenal onset to this disease,

the more common paretic manifestations being, as he terms them, residual and comparable to a certain extent with post-diphtheritic paralysis.

The papers upon pathogenic protozoa were of considerable importance. Professor Novy of Ann Arbor led off with an excellent lantern demonstration in support of his view that spirochaetes are of bacterial nature and not allied to the trypanosomes. Professor M. Nicolle gave the results of his studies of the action of a large series of aniline dyes upon animals infected with some other variety of trypanosome (sleeping sickness, *mal de caderas*, etc.).

With regard to vaccine and variolous organisms Dr. Hewlett read for Dr. DeKorte a further note upon the amoeboid or sporozoon-like organisms which he claims to have cultivated from vaccine lymph. Dr. Ballah of Montreal, in the course of his notes upon vaccine lymph, pointed out that he had seen and at one period believed that he had cultivated for many generations the forms described by DeKorte. Eventually he had found like forms in sterile albuminous fluids and so could only regard them as of the nature of albuminous precipitates. Dr. Ballah drew attention to a remarkable clouding of his media in certain tubes inoculated with vaccine lymph, which clouding manifested itself in successive tubes by passage. He did not venture to make any positive conclusions regarding the clouding save that if of microbic origin, the causative microbes must be at the limit of visibility. Dr. Kinyoun of Philadelphia was a pessimist. He had seen or thought he had seen every type of organism up to spirochaetes and trypanosomes in vaccine lymph. Dr. Ballah described a simple method (depilation by sodium sulphide without scarification) whereby typical vaccine vesicles could be caused to develop in rabbits and guinea pigs. The method promises to be of considerable importance in testing the strength and efficacy of vaccine lymphs.

Dr. Beattie of Edinburgh gave a demonstration of a sporozoon-like site he had studied, found associated with polypoid growths in the nose in India (*Rhinosporidium Kinealyi*).

Three other communications deserve note:—Dr. Beattie's most luminous and convincing summing up in favour of regarding the diplo-streptococcus found in cases of acute rheumatism as a specific organism distinct from the ordinary streptococcus pyogenes; Dr. Armand Ruffer's description of the diverse and contradictory results obtained by those under him at Alexandria, Egypt, in employing Pfeiffer's reaction, agglutination tests and other most modern methods in determining whether spirilla gained from stools of choleraic and dysentery patients

and from the water-tanks of ships were or were not to be regarded as true cholera spirilla. Among other striking results obtained by him it may be mentioned that the majority of the cultures sent to him from India as having been gained from the dejecta of cholera patients, failed to correspond with what the Berlin authorities have laid down as the true *Spirillum Cholerae Asiaticæ*. Lastly, Dr. O. K. Kaufmann of Birmingham, England, described what would seem to be a valuable method of estimating iodides in urine, showing that the rate and extent of excretion of iodides given by the mouth affords a method of determining renal efficiency which is superior to those at present in use.

EMPHYEMA AND MAXILLARY SINUSITIS.—DIAGNOSIS AND TREATMENT.

BY

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Translated by DR. FRANK HARWOOD, Dentist,
Assistant Professor in the Dental School of Laval University.

During the last ten years nasal surgery has made great progress, especially since the remarkable work of Luc of Paris. This author has made a special study of the sinuses of the face, and has greatly contributed toward our advancement in rhinology, by giving us brilliant operative methods. This communication will be a *résumé* of the therapeutic knowledge we have on the chronic diseases of the maxillary sinus, a subject which "La Société d'Odontologie canadienne française" has done me the honour of discussing before it.

Formerly, all suppurations of the antrum of Highmore were invariably treated by means of a canula penetrating into it after extraction of a molar tooth and perforation of the alveolus. Cooper, in the 18th century, first had the idea of this minor operation, and advised washing the sinus with divers antiseptics which were very often employed indefinitely. To-day, with the knowledge we have of the pathogeny of this disease, we are in a better position to fight with success against its ravages, especially since we have learnt to diagnose the difference between empyema of the maxillary sinus and true sinusitis. To explain more clearly the difference between these two diseases,

I must say a few words on their etiology. The diagrams which accompany this article, I trust, will make this subject clearer.

A.—TRUE MAXILLARY SINUSITIS.

When a patient comes to you with suppuration of the antrum of Highmore, the first thing is to find out the seat of the trouble. The recent works of Lermoyez and Mahu, so clear and precise, have largely contributed to the broadening of our knowledge on this subject. In truth, these authors teach us that in maxillary sinusitis, the walls of the sinus are affected, and, in consequence, pus is secreted by the cavity itself. The mucous membrane degenerates into a layer of fungous and myxomatous tissue of a thickness often reaching one centimetre or more. In other words, true sinusitis is a secretion of pus "in situ" (Fig. 1).

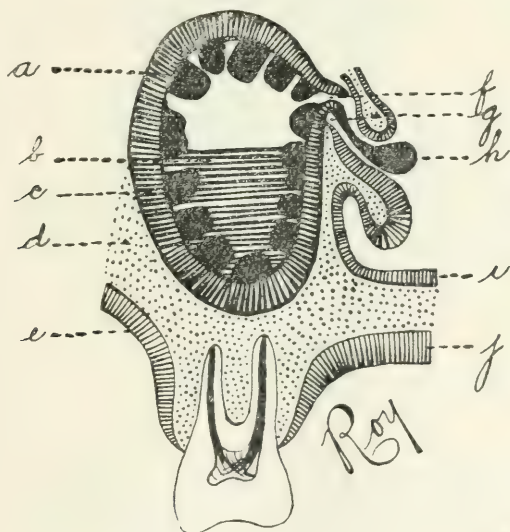


Fig. I.—Maxillary Sinusitis.

a. Buds of the sinusal mucous membrane. *b.* Pus in the sinus. *c.* Hypertrophied mucous membrane of the sinus. *d.* Bony wall. *e.* Gingival mucous membrane. *f.* Ostium of the sinus. *g.* Middle meatus. *h.* Mucous polyp of the nose. *i.* Nasal mucous membrane. *j.* Palatine mucous membrane.

This disease has for origin an acute sinusitis caused by rhinitis due to influenza; or, again, the transformation of maxillary empyema into chronic sinusitis, by alteration of the mucous membrane and formation of granular tissue.

B.—MAXILLARY EMPYEMA.

In maxillary empyema, pus is collected in the cavity without alteration of the walls. This pus may have for origin a dental abscess;

or, again, come from the nose by the ostium, following a frontal, sphenoidal or ethmoidal sinusitis. In these cases, the mucous membrane is normal, and the sinus acts as a reservoir for pus of extraneous origin. It can remain in contact with the mucous membrane of the sinus for a long period without altering it. However, with time, the mucous membrane may become infected and suppurate. Fortunately, this transformation takes a long time to occur, contrary to what takes place in cases of acute sinusitis of nasal organs, where pus in a state of stagnation quickly attacks a mucous membrane which, because of its altered state is in a condition of less resistance from the very first.

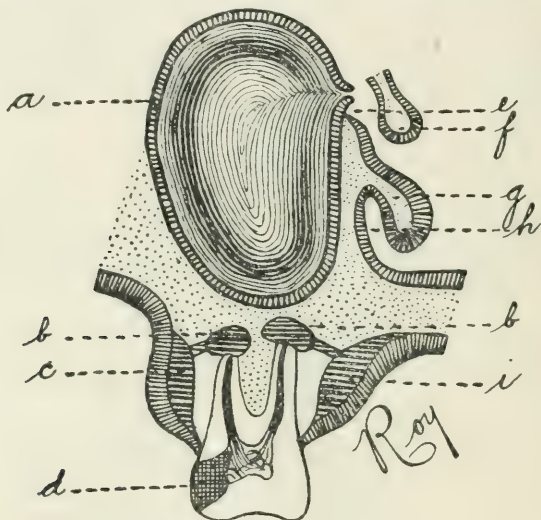


Fig. II.—Caries and dental abscess.

a. Normal mucous membrane of the nose. *b.* Dental abscess. *c.* Abscess of the gum. *d.* Dental caries of the fourth degree. *e.* Middle meatus. *f.* Middle turbinate bone. *g.* Inferior turbinate bone. *h.* Inferior meatus. *i.* Abscess of the palatine mucous membrane.

ETIOLOGY OF MAXILLARY EMPYEMA.

The cavity of the maxillary sinus, regarded from its anatomical relations, can be infected through two different tracts:

1. Infection following a case of periostitis and dental abscess, perforating the alveolus and the mucous membrane of the sinus, an hypothesis which will occupy most our attention in this communication.

2. Infection coming from the nasal fossa by the natural opening of the sinus which is situated in the middle meatus. I will not delay longer on this last mode of infection, but will proceed immediately to dental causes.

An abscess at the apex of the root of a tooth can find its way to the external surface in three ways:

(a) Pus can go toward the interior surface, toward the side of the roof of the mouth, lift the mucous membrane, produce a sub-periosteal abscess, and later produce a palatine fistulous opening (Fig. 2).

(b) Toward the exterior, toward the gum, and produce a gingival fistulous opening (Fig. 2);

(c) Upwards, perforating the floor of the sinus, and lifting the mucous membrane without destroying it (Fig. 3).

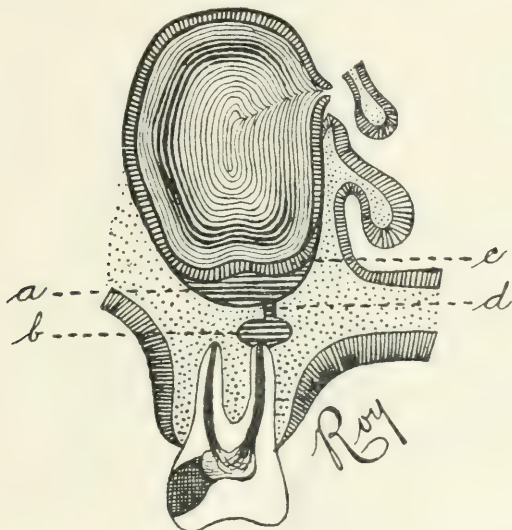


Fig. III.—Blind Abscess.

a. Pus in the sinus. b. Apical abscess. c. Sinusal mucous membrane lifted by pus. d. Perforation of the floor of the sinus.

When pus has remained a certain length of time in this cavity, the mucous membrane of the sinus degenerates and is perforated. This cavity being filled with pus, we are then in presence of a case of maxillary empyema (Fig. 4).

In certain cases, the alveolus and the mucous membrane of the sinus are perforated together without lifting of the membrane by the pus. Such is the mode of formation of this affection so well studied recently by Mahu, whose works have inspired me.

DIFFERENTIAL DIAGNOSIS OF MAXILLARY SUPPURATION.

A patient complaining that when blowing his nose, pus comes out, should be examined methodically so as to find out where it originates.

Naturally here, I am referring to the maxillary sinus. We have at our disposal several means of diagnosing the case, viz.:

1. Examination of the nose; 2. examination of the teeth; 3. examination with electric lamp; 4. exploration puncture; 5. sign of Mahu; 6. sign of Guisez-Guérin.

1. *Examination of the Nose.*—When making anterior rhinoscopy, we see pus coming from the middle meatus. In certain cases there are polypi. Posterior rhinoscopy oftentimes discloses pus coming from the choanæ and spreading on the velum palatum. Allow me to mention also Fränkel's sign, which consists of cleansing the patient's nose, and then to make him keep his head bent forward for a few minutes.

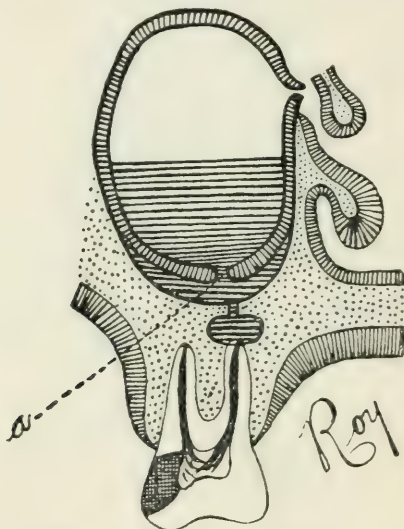


Fig. IV.—Maxillary empyema.

a. Perforation of the sinusal mucous membrane and influx of pus in the cavity.

If another examination shows pus in the middle meatus, we may conclude there is maxillary suppuration.

2. *Examination of the teeth.*—The teeth are next carefully examined, especially the first molar, which is most often involved in these affections. According to de Croës—dentist—the teeth which are most apt to produce infection of the sinus, are the following in order of frequency:

1. First molar; 2. second bicuspid; 3. second molar; 4. first bicuspid and cuspid; 5. third molar.

Caries of the fourth degree, fistula of dental origin, also pain on percussion ought especially to draw attention.

3. *Transillumination*.—(a) *Heryng's sign*.—Examine patient in a dark room. A small electric lamp of six or eight volts is put in the mouth of the patient, who is instructed to close the lips. Both sides of the face should be equally translucent. If one side is darker, there is probably pus in the corresponding sinus.

(b) *Vohsen-Davidsohn's sign*.—When a lamp is used as above described, the pupils are luminous when normal. If one is dark, we probably have a suppuration of the antrum of Highmore; this sign is of great importance.

(c). *Garel-Burger's sign*.—In the normal condition, the eyes being closed, the patient ought to perceive the light on both sides, the lamp being placed in the mouth.

Luc says, however, that the diagnostic value of these signs is not infallible. Thus a thickening of the bone of one side of the face, can obstruct transillumination of the eye or the sub-orbital region, without suppuration of the sinus.

Again, we come across exceptional cases in which the pupil is translucent, even though the operation reveals a maxillary empyema.

4. *Tapping*.—To Moritz-Schmidt is given the honour of first having had the idea of tapping the maxillary sinus. This is done with a special trocar which is pushed into the antrum through the cocaineized inferior meatus, at about four centimeters from the entrance of the nares. We can also penetrate by way of the middle meatus, but there is danger, especially for the eye. The needle removed, an antiseptic lavage is made of the sinus, through the canicula; if there is pus, it passes out through the ostium. When no pus is washed out, we must not necessarily conclude that there is none; for we have observed cases where a membranous diaphragm divided the sinus into two parts.

5. *Mahu's sign; sign of capacity*.—This sign is based on the fact that there is no chronic maxillary sinusitis without a thickening, more or less considerable, from the very first weeks; and later a fungous and myxomatous degeneration of the mucous membrane of the sinus, and, consequently, a marked and always noticeable diminution in the capacity of the sinus. This test is made in the following way: let the patient sit holding the head steady and straight. Apply cocaine, puncture the sinus with a trocar by way of the inferior meatus, wash thoroughly to get rid of enclosed pus. The cavity is filled with fluid to level of the ostium, the excess passing out by this opening. To the canicula adjust Roux' syringe; by pulling out the piston very slowly, the liquid which fills the sinus is drawn into the syringe. Then the capacity of the antrum will be indicated in cubic centimetres.

Mahu concludes by saying: "Whatever may be the capacity of the sinus in a normal state, we conclude the existence of a true chronic maxillary sinusitis whenever the quantity of fluid aspirated is less than $11\frac{1}{2}$ cubic centimetres; and that there is maxillary empyema "when the quantity is greater."

6. *Guisez-Guérin's sign*.—After having recognized a maxillary suppuration by the darkness of the cheek and of the pupil with the electric lamp, and having corroborated the diagnosis by puncture, we examine again with the light. If this time the pupil is translucent, we diagnose an empyema, if still obscure a maxillary sinusitis.

TREATMENT OF MAXILLARY SUPPURATION.

A.—*Empyema of the sinus*.—Whatever may be the origin of the maxillary suppuration, it is the attending doctor's duty to get his patient's teeth examined by a dentist, so that he may treat him more scientifically. When maxillary empyema is diagnosed, and the teeth seem to be the cause of the trouble, Lermoyez expresses himself as follows: "Extraction of the diseased tooth should be effected very carefully so as not to create a communication between the alveolus and the sinus, should this not already exist. This done, two conditions present themselves. When the sinus communicates with the mouth, we must take advantage of this opening to wash out the sinus, but more especially without enlarging the opening, and without putting in a drainage tube. It is only in the case of small alveolar sequestra existing, that one is justified in curetting and cauterizing the alveolus so as to hasten its cure. When the sinus does not communicate with the mouth, we must be careful not to make such communication and evacuate the pus of the empyema by means of irrigation through the nose."

In the case of empyema of buccal origin, the abscess being opened by the extraction of a tooth, it is an easy matter to cure this disease by a few antiseptic washings of the sinus. The drug employed ought to be very well diluted; because we depend more on the mechanical effect of the irrigation than on the antiseptic action of the drug itself.

In case of a patient refusing the extraction of a molar tooth, the dentist could, perhaps, try drainage of a dental abscess, and even evacuate the pus of the sinus by washing, using the palatine root of the molar tooth. This root is always the most at fault in empyemas of dental origin, and sometimes it is in direct relation with the mucous membrane of the sinus. However, the result is always doubtful, and oftener we are forced to resort to extraction.

If washing of the sinus is done through the nose for a nasal empyema, it is better to tap through the inferior meatus at once. In truth, it is very difficult to wash thoroughly this cavity by its natural opening, for, on account of the complicated anatomy of the part, the fluid would have to travel back by passing near the canula, and the washing would be incomplete. Hajek and Lermoyez have made the following experiment: A lavage of the sinus is made through the ostium and the fluid comes out clear; immediately after a puncture through the inferior meatus brings out curdy pus. This proves that the fluid penetrating by its natural orifice reaches the maxillary sinus by its upper part, and comes out at the same point; so that the stream does not wash the floor of the cavity thoroughly.

B.—True maxillary sinusitis.—When the diagnosis of true maxillary sinusitis has been thoroughly established by means of the ingenious methods of Guisez-Guérin and of Mahu, the patient is again instructed to call on his dentist if the trouble is suspected to have originated by the mouth. The latter, after having extracted the carious tooth, should be careful not to open the sinus, and more so to put in a drainage tube. However, should he suspect periostitis or a sequestrum, he would be justified in attempting its removal. Very often his efforts will be useless, and the sequestrum will be removed only by radical operation. It is better to cure the gums before treatment of the sinus, because the existence of an alveolar fistula is unfavourable for the success of a later operation. I will not speak of lavage here; because in a true sinusitis antiseptic irrigations are not sufficient to cure a mucous membrane in a state of fungous and myxomatous degeneration. It is then necessary to adopt a more surgical treatment which will allow perfect curetting of the antrum of Highmore. There are three principal ways of reaching the sinus:

1. Claoue's method.
2. Desault's method.
3. The radical operation of Caldwell-Luc.

A.—Claoue's method.—This operation, as practised by the author, consists of three steps:

1. *The removal of the anterior two-thirds of the turbinated body.* This is removed with scissors close to the nasal wall.

2. *Resection of the wall.*—The sinus is opened by means of a trephine or by an electric drill. The opening is begun about two centimeters from the anterior extremity of the turbinated body, and is carried back far enough in this manner to admit freely the tip of the thumb.

3. *Cleansing and dressing of the sinus.*—The sinus is washed, the largest buds only are removed with the curette. The aim of the author is not a thorough curetting, but a drainage. The cavity is touched with chloride of zinc and is packed for forty-eight hours with iodoform gauze. The following days, wash the parts, and blow in a non-irritant powder, after having dried the mucous membrane of the sinus.

This method presents advantages and disadvantages. The only plausible advantage is that it does not necessitate a general anesthesia. According to its author, the operation is not very painful and is easily performed, if the turbinated body has been well removed.

Among the many disadvantages of that intra-nasal operation, the greatest criticism which one can make is that it does not allow a sufficient exploration of the sinus, and consequently a complete curettage is impossible. Moreover, nowadays, it is a recognized fact that the success of an operation depends on the thoroughness with which it is practised. And again, the author himself acknowledges that his method would have been powerless to cure certain patients who were definitely cured by a Caldwell-Luc's operation.

B.—Desault's method.—This operation consists in opening freely the anterior wall of the maxillary sinus, after having cut the gingivo-labial mucous membrane at the point of union. The antrum is then curetted with care, drainage is established, but the buccal wound is not sutured. The secret of this method is to watch daily the progress of epidermization which takes on an average a year and a half. The doctor should keep the wound opened, and watch that there is no formation of new buds in the antrum. When the patient is cured he should wear a prosthetic appliance to close the opening of the sinus.

Among the advantages of Desault's method, we should recognize that when we have a sinus in which the orbital wall is attacked by osteitis, the watching of the bone repair is rendered very easy through the opening into the sinus. However, its only superiority over Caldwell-Luc's method, is in the case of extensive alveolar osteitis, due to dental lesions. For the cure to be definite, it is necessary to make a large resection of the whole alveolar border, and sometimes to remove part of the floor of the sinus. Then, under these circumstances, it is impossible to attempt the reunion of the gingival wound, because the rough edges would invariably be attacked by sphacelism. Moreover, it is contra-indicated to make a naso-sinusal opening.

This method, like the preceding one, presents also disadvantages:

1. The patient has to undergo numerous dressings, accompanied by curetting and cauterization of the sinus for nearly two years.

2. The opening has a great tendency to close, and every day the patient should insert his finger into it.

3. The food can be masticated on one side only, and to quote Luc's picturesque expression, the patients are condemned to eat everything "à la sauce iodoformée."

4. Add to this the wearing of a prosthetic apparatus.

C.—Caldwell-Luc's method.—The radical cure of maxillary sinusitis by this process is certainly the greatest invention of the surgery of the antrum of Highmore. Caldwell of New York, in November, 1893, published an article on this subject giving the description of this operation. However, his work appears to have passed unnoted even in his own country. In May, 1897, Luc of Paris, gave to the "Société Française d'Otologie," a communication on this method which bears his name. He declares having noticed the article of his American colleague, more than a year after his own experiments. Following is a description of the six stages of this radical cure:

1. *Incision of the mucous membrane.*—The patient is anæsthetized with chloroform, and a pledget of cotton is placed between the molars, to absorb the blood and prevent its falling into the larynx. It should be changed often. After pushing away the upper lip, the head is turned slightly toward the operation side, and a cut is made in the gingivo-labial groove, from the first molar to the canine tooth.

2. *Opening of the sinus.*—The anterior wall is opened with the chisel and mallet, after having been well rugined. The opening should be large so as to allow a free access to the instruments, and will end on the internal wall.

3. *Cleansing of the cavity.*—The sinus should be very carefully scraped, for on this depends the success of the operation. Attention should be paid to the angles, and Luc's curette will be indicated here.

4. *Creation of an artificial opening.*—The inferior turbinated body is removed with the Laurens' forceps, and a large sinuso-nasal communication is established, preferably with Lombard's forceps. The opening should be on the floor of the sinus so as to facilitate drainage.

5. *Naso-maxillary drainage.*—The sinus is very carefully dried, and then cauterized with a solution of 1 in 20 of zinc chloride. We push in the antrum a piece of iodoform gauze, which is brought out through the corresponding nostril, and the remainder of this is lightly packed into the sinus.

6. *Reunion of the buccal wound.*—The wound is sutured with catgut by a continuous stitch starting from the external angle. A small needle specially curved will be useful.

The cheek is generally swollen on the day following the operation. The mouth is gently washed with an antiseptic, and during the first days the patient is fed on liquid foods. About the fourth or fifth day, the iodoform gauze is removed, and we begin a series of irrigations. The average of five weeks is generally sufficient to bring about a complete cure, by the formation in the sinus of a fibrous tissue epidermized by the epithelium of the nose.

We cannot recommend too strongly Caldwell-Luc's method as the operation to be preferred for true maxillary sinusitis, because it has all advantages over the others. However, as we were saying above, we will make an exception for the cases of necrosis of the alveolar border with osteitis of the floor of the sinus, where we should use Desault's method.

Allow me to relate here the case of a patient who was operated by the Caldwell-Luc's method, and who had previously been operated upon by the Claoue's method.

Case.—Mr. J. S., aged 24, recommended to me by Sir William Hingston, came to the Hotel-Dieu Hospital for consultation on the 20th of July, 1905, for an affection on the right side of the nose.

He has lived in Canada for a year, and is a binder by trade.

Personal history.—He tells us that since five years pus comes from the right nostril, but cannot tell if it came after a cold in the head. He had had scarlatina and measles in childhood. He has also had slight attacks of rhinitis without being subject to this disease. Excepting the above mentioned fevers, he has always been healthy.

Family history.—His family is in excellent health, and his history reveals no diathesis which might explain the local disease.

Physical examination.—By means of anterior rhinoscopy, we find a total absence of the right inferior turbinated body. There is a large communication between the nose and the sinus. The entire nasal fossa is covered with pus which seems to take its origin in the antrum. Slight hypertrophy of the left inferior turbinated body.

Posterior rhinoscopy reveals a small quantity of pus coming from the choanæ; catarrhal pharyngitis. The larynx is normal.

All the upper right teeth have been removed. The patient said he had them extracted two years ago because they were carious and pained him. The gum is well healed.

A lavage of the sinus brings out a large quantity of pus, and the right cheek and pupil are obscure when examined with the light. The left side is normal. There is no tuberculosis nor specific history. Absolutely normal state of all the other organs.

The patient tells us that on the 10th of March, 1905, he underwent an operation on his nose in one of the hospitals of the city. The following days they washed out the sinus, and put in a strip of gauze. He followed this treatment since the above date, that is, more than four months; and, as there is no change, he gives up hopes of cure, and it is then he comes to us.

It was evident we had a case of maxillary sinusitis that Claoue's method had failed to cure. After explaining to him his trouble, we propose a second operation which he accepts, and which was done on the 27th of July, 1905.

Operation.—Anæsthesia of patient with chloroform, incision of the gum at the point of election after Luc's method. Large opening in the anterior wall of the sinus which is filled with pus and fleshy buds; thorough curetting of this cavity, cauterization with zinc chloride. Drainage of the sinus with a strip of gauze passing through the nasal opening made at the first operation; suture of the lips of the wound.

The results were excellent; we removed the drain on the fourth day. We then begin daily irrigations of the cavity, and five weeks after the operation the patient was definitely cured.

If this operation of Caldwell-Luc has given a result more beneficial to the patient, it is because we were able to thoroughly curette the sinus.

Conclusion.—In presence of a suppuration of the antrum of Highmore, it is necessary to make a differential diagnosis between empyema and true maxillary sinusitis. We have for that the signs of Guisez-Guérin, and especially that of Mahu, which will be of great help.

We then see if the trouble is of nasal or of dental origin. In the last case the diseased teeth must be extracted, and if we have a case of empyema of the sinus communicating with the perforated alveolus, we must wash without putting in a drain. It is now recognized that it is better not to use the canula, because it may retard and sometimes stop the cure, by epidermization of the dental tract.

If the origin is nasal, the neighbouring sinuses must be treated, and a few punctures made in the inferior meatus.

When we have a true maxillary sinusitis we should equally see if the teeth are the cause; and, after having had these attended to, we should open the antrum through its anterior wall.

Claoue's method should be followed only on patients who cannot be anæsthetized.

Desault's method is suitable only for a case of sinusitis complicated with necrosis of the dental alveolus, and part of the floor of the sinus.

In all other cases, we should use the excellent method of Caldwell-Luc, which will give us a prompt and definite cure.

This, gentlemen, is the path we should follow in presence of a maxillary suppuration.

SOME NOTES ON OPSONINS.

BY

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In trying to establish the relative parts played by the various elements of the blood in the process of phagocytosis, it was found that the leucocyte was not so independent as has been held by some observers. It became evident that the phagocytosis depends on an effect exerted on the bacteria by the blood fluids, at any rate some element of the blood independent of the leucocyte. Thus leucocytes suspended in a medium other than the serum normal to them, physiological saline, for instance, did not show anything like the phagocytic power of leucocytes in the normal blood fluids. In other words, in an encounter between leucocytes and cocci in a menstruum of saline, the phagocytosis was much less marked than that observed in a menstruum of cell-free serum of any kind.

The following points were next established in this connection:

(1) The substance, evidently in the serum, by acting on the bacteria, prepares them for ingestion by the leucocyte. Its independence of the leucocyte is established by the fact that variation in the number of leucocytes in the blood does not cause a proportionate variation in the phagocytic power. From this preparatory action, the substance has derived the name opsonin.

(2) The activity of the opsonin may be destroyed by heating to 60 degrees for ten minutes; it is also found to deteriorate and gradually disappear *in vitro*.

(3) The dependence of phagocytosis on the serum rather than on the leucocyte was further shown by the fact that in the presence of a normal serum, the leucocytes of a person suffering from, say, furunculosis, would take up just as many bacteria as would those of a normal person. If, however, the affected person's serum was used, the number of cocci taken up by his leucocytes would be much smaller than on the previous occasion.

It has also been demonstrated, that if the serum of an individual whose phagocytic power has been artificially raised, be allowed to come

in contact with the leucocytes of a normal individual, those cells will show the increase in phagocytic power noted in the individual under treatment. Per contra, the same individual's leucocytes in contact with the blood of a normal individual would show a normal phagocytic power.

(4) A distinct opsonin is found for each invading organism. The only exceptions to this statement hitherto found, are the Klebs Löffler and the Xerosis Bacillus, both of which are insensible to any opsonic action of the blood fluids. The specificity of the opsonins has been demonstrated by removing all the opsonin of a given species of organism from a given serum, by allowing it to come in contact with a strong emulsion of that organism. After removing all traces of the bacteria, it is found that leucocytes introduced into that serum have no phagocytic power as far as the particular organism is concerned, while they still retain it for organisms of different varieties.

(5) The opsonins have been shown to be independent of the bacteriolysins and agglutinins. They co-exist almost always, and there is reason to believe, in the case of pulmonary tuberculosis, at least, that the abundant presence of the latter may go hand in hand with an increase in the opsonic power. In cases of tuberculosis with a high or rising opsonic power, the tubercle bacilli in the sputum tend distinctly to clumping.

By the term "opsonic index" is meant the relation of the phagocytic index (obtained by dividing a total number of bacteria incorporated by a total number of leucocytes incorporating) of the serum of the diseased person to that of the healthy person.

The following important generalizations have appeared justified from the investigation of a large number of opsonic indices:

(1) The index remains practically constant in the same individual from day to day, but it may be distinctly lowered by severe bodily exercise.

(2) When the infection is well localized, the index as a rule is low. This generalization has been made largely on the observation of cases of furunculosis, acne and sycosis. It does not appear to be true of incipient and well localized cases of pulmonary tuberculosis. Here the index tends to be above normal.

(3) In cases where the disease is well localized, there is found coincident with the rise and fall of the opsonic index a fairly constant improvement and aggravation of the clinical aspect of the case. The argument that the low phagocytic power found in these well localized cases of bacterial invasion is a result and not a cause thereof, is met

with the statement, that "it is infinitely more probable in view of the entire absence of symptoms in the milder cases of staphylococcic infection, that it is the defective phagocytic power of the patient that furnishes to the staphylococcus, which is normally present on the surface of the body the opportunity for invading the skin."

The low index in these cases is explained by the probable absence of any auto-intoxication of an amount sufficient to produce a general reaction on the part of the body as a whole.

(4) In cases in which the infection is not well localized, or in which it is systemic, the index will be found to vary between greater or less extremes of height or depth. This is held to be due to the varying amount of toxin discharged into, or present in the body at large, and the variation of the bodily reaction thereto.

The principle of treatment evolved from these observations is the production of an active immunity in the elaboration of which the tissues of the patient are educated, as it were, by the introduction into them of vaccines. Under the head of vaccines are classed attenuated living cultures of the invading organism, sterilized cultures and derivatives of such cultures. The procedure is to be recommended only in cases in which the disease is well localized, for the reasons (1) that in such cases only the products of the metabolism of the bacteria are absorbed, as distinguished from the substances in the bacterial protoplasm which evoke a production of antibacterial substances. (2) On account of the danger of adding fresh toxine to that already present in the body the treatment would be out of place in cases in which the infection was evidently general or in which wide variations in the opsonic index showed a tendency to generalization.

The responsible organism then is isolated, a vaccine thereof made (in cases of tuberculosis, Koch's tuberculin TR. diluted with 0.75 saline is used) and injected into the patient. This procedure is followed by a very generally observed fall in the opsonic index, due it is supposed to the increment of toxic material in the system. This is what is known as the negative phase of the curve of immunity. The reaction of the body, which usually follows within twenty-four hours, is expressed by a rise in the index and is known as the positive phase. Of course the only way of recognizing the presence of a positive or negative phase is by ascertaining the opsonic index and on this the course of the treatment depends. From the moment the index begins to turn, it increases steadily through what is known as the "flow and reflow" until it reaches or exceeds its previous height. At this point it remains constant for a shorter or longer period of time. The same

phenomenon of positive and negative phase is observed after each injection, with the eventual production in many cases, at any rate, of an index at a higher base line than at the commencement of the injections. Coincident with the attainment of the higher index is the amelioration or disappearance of the local invasion.

The injections must be so timed as to coincide with a positive phase, inoculation during a negative phase will result in a lessening of the powers of immunization and in harm to the patient. It means a superaddition of negative phases. Injections on the other hand, at the period of the positive phase increase the opsonic index more or less permanently and so they produce a higher state of immunity with whatever it may imply. Ignorance or disregard of the succession of phases is held to account to a large degree for the failure that has attended the production of antitoxic sera other than that of diphtheria, both as regards the serum-yielding animal and the patient. In the latter case the mistake already referred to has been made, and in the former, the serum has been withdrawn during the negative phase of certainly lessened immunity and, perhaps, positive toxicity. The success in diphtheria is thought to be due to the extreme susceptibility of the guinea pig to the diphtheria toxine which makes it possible to eliminate all toxic sera (negative phase sera) from use.

From the experience gained thus far of this method of treatment it would appear that many cases of chronic straphylococcus infection, such as are to be seen in acne forunculosis, sycosis and impetigo contagiosa will yield readily and completely to it. As long as there remains a focus of disease the patient is liable to re-infection. In pulmonary tuberculosis the best results appear to be had in "the chronic cases of phthisis which, with a fair amount of the disease and a fair amount of cirrhosis and healing, are nevertheless practically stationary"

In surgical tuberculosis, the focus should be removed by the knife as completely as may be and that after the opsonic power has been raised as much as is possible. This stage of higher immunity should naturally be maintained. It follows from this, that no operation should be performed or injection proceeded with during any but the positive phases. In spite, however, of the utmost care taken in the timing of the injections with regard to the positive phase of immunity, cases will be found that will not be benefitted. All depends on the individual's power of response.

The use of the opsonic index as an aid in differential diagnosis depends on the generalizations already referred to, and largely here on the specificity of the opsonins.

In tuberculosis the normal index is relatively low. The statement has been made, that a person whose index to tubercle bacilli is lower than 0.8 or higher than 1.2 is probably tuberculous.

SOME RECENT ADVANCES AND PROBLEMS IN BIO-CHEMISTRY.*

BY

PROF. R. F. RUTTAN.

The practice of medicine so far as it is strictly scientific is based upon principles established by physiology, pathology and pharmacology. The history of these three concrete sciences shows that they have become more accurate and scientific as their generalizations come to be based upon the experimental results of biology, chemistry and physics. So in turn chemistry is largely based upon physics, as the latter is upon the abstract science of mathematics. Each concrete science becomes more accurate and reaches nearer the exact truth by adapting the principles and theories of the more abstract and experimental sciences which are basal to it. As Osler says: "The study of Physiology and Pathology within the past half-century has done more to emancipate medicine from the routine and thralldom of authority than all the work of all the physicians from the days of Hippocrates to Jenner, and we are as yet but on the threshold."

The great problems of biology which lie at the foundation of physiology and pathology have been resolved into factors which are being studied by aid of the atomic theory, and Newton's law of motion. It would seem, indeed, as though all other lines of research and avenues of progress in medicine have become during the last four or five years comparatively deserted for those where advances are made through the technique and theories of chemistry and physics.

That field of science which lies between chemistry proper and physics, the so-called "Physical Chemistry," has advanced of late years with giant strides. The most important recent development of this branch of science has been characterized by the establishment of comprehensive principles which fertilize the whole foundations of chemistry and promise nourishment to all branches of chemistry for the future. The researches of Van t'Hoff, Arrhenius, and others have altered and broadened the view of chemists regarding the nature of chemical affinity, the condition of matter in solution and the distribution of energy in chemical

* Abstract from Introductory Lecture of the Medical Faculty of McGill University for Session of 1906-07.

reactions. No field of chemistry has been enriched to a greater extent by physical chemistry than that of physiological or bio-chemistry. The two pillars upon which the edifice of modern physical chemistry rests, are the application of the theories of thermodynamics to chemical problems, and the theory of solutions. The laws of solutions find in physiology applications of the highest importance; on the other hand, the principles of thermodynamics have not, up to the present time, been introduced to explain or elucidate any of the important problems of physiology.

The modern theory of solutions contains two important principles: 1st, The extension of Avogadro's law of gases to dilute solutions. Avogadro's law of the relation of the number of molecules in a gas to its temperature and pressure is one of the greatest generalizations of chemistry. The extension of this principle to dilute solutions marked a great advance in our knowledge of matter. It may be briefly stated as follows:—Two solutions of different substances having the same osmotic pressure and of the same temperature, contain the same number of molecules, *i.e.*, matter in dilute solution behaves as a gas.

The second generalization in connection with the theory of solutions is, that solutions of substances which conduct electricity, that is electrolytes, consist not of molecules of the electrolytes, but these molecules of acids, bases and salts dissociate or break down into ions. Thus, a solution of sodium chloride, when dilute, consists almost entirely of ions of sodium and ions of chlorine and one of hydrochloric acid, of hydrogen ions and chlorine ions. This ionization of electrolytes occurs almost entirely in aqueous solution. Recent chemistry teaches that all reactions of electrolytes in solution take place between the ions.

The importance of this complete change of view with regard to the nature and reactions of salts in solution to the physiological chemist is very obvious. The human body consists of over 63 per cent. of water and the cell protoplasm of 80 per cent. The materials for the nutrition of the cells of the body are conveyed to them in aqueous solution; the chemical reactions which go on in these cells are carried on in aqueous solution; the worn out material, the result of cell action, is carried away also in a condition of aqueous solution or suspension; hence the chemistry and physics of substances in aqueous solution are of paramount importance in the study of physiology. It has been found that the amount and nature of the material in aqueous solution, as predicted by Avogadro's principle, affect the osmotic pressure, the freezing point, boiling point, etc., of the solution. Hence, very much of

practical value, both in physiology and pathology, has resulted from the accurate measurement of the physical characters of the various fluids of the body. Much light has been thrown upon the character of the substances in solution in the blood by study of the osmotic pressure of defibrinated blood, its freezing point in various conditions of health and disease, and quite lately a study of the viscosity or internal friction of human blood in health and disease. The determination of the freezing point can now be made with rapidity and exactness by a modification of the apparatus used for determining molecular weights, and it is an instrument regularly used in the hospitals of Germany. The cryoscopic reaction of urine is a routine test in many hospitals.

The view that salts, when in dilute solution are almost completely ionized, whereas in more concentrated solutions the ionization is less complete, has led to a revision of the physiology of solutions containing electrolytes in the body. The physiologist now looks to the ion for the stimulating or depressing effect of an electrolyte, and the pharmacologist studies not the action of a salt but the ions of that salt.

Solutions of electrolytes may act upon living cells either chemically or electrically, or both. The subject is at present in process of development; it is in the laboratory stage. Matthews, for instance, has reached the generalization that all anions have a stimulating, and all kations a depressing action upon bioplasm in general. It is also fairly well established that there is a connection between the valency of an ion and its physiological action. An ion with high valence carries a greater number of electric charges and the depressing or stimulating effect of a salt varies according to the increased valency of the kation or anion. The valency of an ion is not the only explanation of the physiological action of a salt; it is found that it also depends upon the tendency of an ion to give up its charge, *i.e.*, its electrical stability, or, as it is called, its ionic potential.

In addition to the chemical and physiological action of ions, the physical chemists are studying their effect on bioplasm through their power to alter the state of such colloid aggregations, and their effect upon surface tension.

Besides the ionic action of electrolytes, they may alter the properties of the cell contents by osmosis or by affecting the activities of the ferments or enzymes. The extension of Avogadro's principle to solutions has made the measurement of osmotic pressure in living tissue a possibility.

Osmotic pressure can be measured directly only with the greatest difficulty; but indirectly the law governing solutions enables us to do

so, by taking the freezing or boiling point of the solution, determinations which can be made with great accuracy, owing to the improved technique of the physical laboratory. The accurate study of osmotic pressure in the different organs of the body has enabled physiologists to reach certain very important conclusions.

The solutions in the tissues diffuse from cell to cell through membranes similar to those which outside the body obey the laws of osmosis. Some of the earliest studies made in connection with osmotic pressure of aqueous solution of salts, were made by the use of living animal and vegetable cells. The investigations of de Vries on the walls of vegetable cells, and later the work on osmosis by the celebrated Dutch physiological chemists, Donders and Hamburger, were made on the delicate membrane which bounds the red blood corpuscle. The results obtained by the study of the passage of fluids through these living membranes were similar to the results obtained later when experiments were made upon the artificial semi-permeable membranes; that is to say, that the passage of fluid through the living membranes seemed to conform exactly with the laws of osmotic pressure as ascertained by the use of semi-permeable membranes in the laboratory.

The walls of living cells by no means play the part of an inert membrane to which the laws of osmosis apply. The action of kidney cells, for instance, is nearly opposite to that of the semi-permeable membrane. instance, is nearly opposite to that of the semi-permeable membrane. There is, therefore, in these cells an energy transformer, a force other than those with which we are acquainted in the study of the energy of non-living matter. The resolution of this vital force, or biotic energy, into terms of chemical energy, etc., has not yet been accomplished. This mysterious form of energy is being studied by the methods of the physical laboratory, just as the study of other manifestations of energy is made, viz., by observing the interactions between this form and other known forms of energy. It may be considered as established that no similarity exists between diffusion of solutions through living membranes even the thinnest, and diffusion through dead semi-permeable membranes. The former can only be studied in conjunction with a form of energy peculiar to the living cells.

One of the most startling discoveries of recent years was made by Prof. Loeb at Chicago University, viz., that osmotic pressure can partially replace the act of fertilization of the eggs of certain sea organisms. These eggs in sea water remaining unfertilized die very rapidly. By an elevation of the osmotic pressure, by the addition of any one of a number of salts or sugar or urea, the development and segmentation

of the egg proceeds until the organism begins to have independent movement.

The chemistry and physics of the solutions of the body, is further complicated by the presence of the so-called colloids. These sometimes form solutions; they diffuse scarcely at all through animal membranes; sometimes they are partly dissolved and partially suspended (forming the so-called "Solution Aggregates"): they are thrown out of solution by electrolytes; they are themselves non-conductors of electricity; they possess extremely high molecular weights, and their solutions have a correspondingly low osmotic pressure and low diffusion velocity.

To this group of bodies belong the proteids and the enzymes.

The colloid constituents of the body are, from a chemical standpoint, the most difficult of all to investigate. Not only are they made up of molecules of extraordinary size and complexity, but they are extremely difficult to obtain in a pure state. They are so unstable that the atoms in the molecules seem to shift their relative positions under chemical action, like grains of sand on the sea shore. This is especially true of the molecules of the substances called albumen and the enzymes.

A problem of fundamental importance in biological chemistry to-day is, What is the exact composition of the proteid molecule? This molecule, consisting as it does of many hundreds of chemical atoms, stands alone in its importance. It is the basis of cell action, and it is the chief constituent of the structure of living organism. Is the problem of the composition of this giant among chemical molecules one which lies beyond human powers to solve?

A knowledge of the constitution and actions of albumen and the enzymes must precede and form the basis for all investigations of those mysteries which underlie the phenomena of cell life, self preservation, development and reproduction.

It is one of the hopeful signs of the times that this forbidding field of chemical research, this "darkest Africa" of the chemical world, beset with such apparently insurmountable barriers to chemical investigation, has recently attracted to itself several of the greatest living chemists and physicists. Formerly, with few exceptions, the expeditions to penetrate this dark jungle were led by physiologists, pathologists or bacteriologists; brilliant men, with original minds, and unsurpassed industry, but without the technique and special training which are essential to progress in this field of research. Now, with such men as Emil Fischer and Van t'Hoff of Berlin, Bredig of Heidelberg, Seigfried, Luther and Ostwald of Leipzig, together with many others known to fame, we have leaders who are trained chemists and physi-

cists, with lifelong experience in one line of research, and these are devoting themselves, training and inciting others towards a solution of the physico-chemical problems which lie at the very foundation of a rational physiology, and hence a rational pathology.

Nothing in chemistry or biology is more fully established and recognized than the fact that we are densely, absolutely, ignorant of the dynamics of life and the constitution of any protoplasmic body. It is, however, an intensely interesting thing to see with what resistless march Science seems now approaching the final investment of these two strongholds of ignorance, of which, the latter—the constitution of proteids—seems to be a key to the former. The persistent efforts of physiological chemists in the study of the products of proteolytic fermentation has of late years added enormously to our knowledge of proteids. The recent attack upon the stronghold—the albumen molecule—may be said to be the highest enterprise that a chemist has ever undertaken with any reasonable prospect of success.

A paper was given to the world by Emil Fischer of Berlin on the 6th of January last, entitled “Researches upon Amino-acids, Polypeptide and Proteine.” In reading this paper it is difficult to say which commands the greater admiration, the author’s consummate skill and endless resources in sweeping aside each difficulty as it arose in this most complicated field of experimental enquiry or his intense and ceaseless activity in producing, month by month, during the past five years a wealth of new knowledge, of new methods and new bodies of the first importance to biological science. Although biological chemistry has done much in the past in the way of classifying and naming the numerous members of the proteid group, in preparing a few members in a chemically pure crystalline form, in attaching to different members physiological functions, still our knowledge of their chemical constitution has, up to the present, been extremely small. We knew the molecules were enormously large, we knew the percentage composition in terms of carbon, hydrogen, oxygen, nitrogen, sulphur, etc., of many, but our knowledge of the proteids chiefly depended upon the products of hydrolysis by acids, alkalies and digestive ferments. When, by the action of acids, alkalies or enzymes proteids become hydrolyzed, that is, take into their molecule one or more molecules of water, they break down into what are called the degradation products.

Briefly, in order of formation, these consist of; various albumoses, various peptones and peptides, which further break down into amido acids or amino acids, as they are more properly called. About three-fourths of the albumen molecule is composed of bodies allied to glyco-coll, *i.e.*, amino acids.

The albumoses and peptones differ in order of their solubility from the proteids proper and possess certain other reactions by which they are distinguished, but until the work of Fischer, the molecular structure of no one of the degradation products of the proteids more complex than amino acids was known. Some twenty-two amino acids have been obtained from the hydrolysis of various proteids. These are for the most part crystalline bodies which can be isolated, purified and studied by the methods employed in laboratories for organic chemistry. Some of them have even been built up from their elements while the structure of the molecules of most of them has been worked out chiefly by Fischer with great exactness.

Fischer set himself the task of piecing together these minute fragments of the proteid molecule, the amino acids, with a view of building up a body having the properties and characters of a peptone or an albumose. From the simpler members of this group he devised methods for building up more complicated ones and uniting these. By infinite trouble he obtained still more complex molecules which, when combined in a certain definite manner, produced a highly complex peptide called by him a polypeptide. This was found to possess the properties of the simpler members of the peptone group of bodies. Thus, by a slow process of sapping and mining extending over a period of some five years, has the first redoubt of this great citadel been captured, and it may prove a key which will open to us the most intimate structure of albumin itself. Fischer himself is confident of being able to reproduce some of the natural albumoses and peptones by an application of the methods and reactions employed in the synthesis of the simpler members already produced. But, as he says, in concluding his paper: "The problem of producing true albumins is of far greater difficulty, for their reconstruction from the first products of hydrolysis (peptones and albumoses), will require entirely novel methods, and when these are found their application will probably be a laborious process." One may therefore ask the question whether the eventual success will compensate for the labour expended. This depends, in my opinion, on the profit which biological research can derive from it, and this, again, on the manner in which the synthesis has been accomplished. For a synthesis made by the direct union of albumens and peptones might be compared to a tourist who rushes through a country in an express train and sees nothing. It is otherwise if the synthesis is constrained to advance slowly and to construct the molecule, step by step. It is then like a traveller journeying on foot, who notes every feature of the road, and tries each side path before the right one is found. He not

only learns every inch of the country, but understands the nature of its inhabitants. He knows his way and can direct others. I can only look upon it therefore as a piece of good fortune that synthesis demands the creation of countless new methods of construction, separation, and recognition, and the study of hundreds of intermediate products before the proteids themselves can be reached. For these methods may not only serve in the end to produce all the natural albumins, but bring to light many more which may eventually serve to explain the remarkable changes which contain proteids effect in the form of enzymes and toxins."

I am optimistic enough to believe that the colossal task of unraveling the structure of the higher proteid molecule is one which will be accomplished in the lifetime of many of those who are present.

Important as the result of this investigation of Fischer is, its value is enormously enhanced by the fact that in the process of building up those peptides, he has devised entirely new methods and a new technique for the investigation of the secondary products of the decomposition of proteids. He has thus furnished the whole chemical world with new and efficient tools by which to continue the work so well begun. But, after all, the greatest value of this most magnificent contribution to biological chemistry is not so much the actual benefit which it has conferred upon physiology and pathology, as the clear prophecy which such a work utters of greater discoveries to come.

The advances in physical chemistry, especially in the studies of the laws and phenomena of solutions, both of crystalloids and colloids, have gained for us our closest approach to the phenomena occurring in a living cell. Our knowledge of the chemical dynamics and the transformation of energy which distinguish living from non-living matters is very small indeed. We know, however, and can demonstrate by experiment, that the two fundamental laws of the non-living world, viz., the Conservation of Matter and the Conservation of Energy, are obeyed throughout the whole range of organized nature. We also know that the sources of the energy of living cells are the same as for non-living systems of energy and that the sources of the matter of which living cells are composed are the same as for non-living matter, and, finally, it is no longer seriously disputed that chemical processes in living matter are specifically the same as those of the chemical laboratory. The first great step towards a recognition of this important fact, viz., the similarity of living and non-living chemical reactions was made by Lavoisier, who demonstrated by experiments upon animals, in 1780, that respiration and combustion were but different phases of the same process, viz., oxidation. Nearly

fifty years later, in 1828, the synthesis of urea by Wohler led to the complete downfall of the belief in an inscrutable *vis vitalis*, an unknown and unknowable animal force. The acknowledgement on the part of the medical profession, a century ago, that they not only did not know, but could never know, anything about the substances composing the body, or their mode of action at once suggested that all scientific investigation regarding the cause of disease was superfluous. It caused a wretched delay in the progress of the science of medicine, as it closed for nearly three-quarters of a century the only path in science which leads to discoveries of value, namely, the experimental method, and left medicine dependent wholly upon empiricism and tradition.

We should be careful, however, not to allow the reaction following our liberation from the bondage of the old view of a mysterious vital energy in no way co-related to the known forms of energy, to carry us too far. Probably the German school, which holds that there is in the living cell no form of energy whatever which is not to be found in non-living matter, is taking an extreme view. It is one, however, with which we cannot help having the greatest sympathy, as it encourages investigation and stimulates research.

There is another school, an English school, which holds that there is a force, called Biotic Energy, to give it a name, which is peculiar to living matter. This school defines this form of energy as follows:—"The conception is that biotic energy is just as closely and no more related to the other forms of energy existing apart from life, such as heat, light and electricity, as these are to one another, and that in the presence of the proper and adapted energy transformer, viz., the living cell, it is capable of being formed from and converted into these other forms of energy, the law of conservation of energy being obeyed in the process just as it would be if an exchange were to take place between heat and chemical energy, or motion and electrical energy."

Whether we range ourselves with one school of thought, or the other, the phenomena of cell action must be studied in the same way as we study the known forms of energy; this is by transforming one form to another, such as electricity to magnetism, chemical energy to heat, and observing the phenomena that accompany the transformation. To change one form of energy into another requires the action of some energy transformer. We know how the dynamo transforms motion into electricity, the steam engine heat into motion, the metal iron, for some special reason, is an excellent energy transformer of electricity into magnetic energy or mechanical motion, or *vice versa*. So

also chlorophyll in the leaf of the plant is an energy transformer, converting light energy into chemical energy. Similarly the enzymes of ferments in the living cells are specialized and strictly limited energy transformers for the transformation of chemical energy. These enzymes act by bringing about chemical changes and transformations, but, like the dynamo, which converts motion into electricity, it remains after the conversion in the same condition as before it. Similarly, a piece of platinized asbestos will ignite a stream of coal gas by bringing about rapid oxidation owing to its presence only, the platinized asbestos itself remaining unchanged. Platinized asbestos is a type of the great group of substances called Catalysors, or Catalytic agents.

As long ago as 1836, Berzelius advanced the suggestion that chemical action in living matter was aided by some such bodies as those which brought about catalytic action in the chemical reactions of the laboratory. The value of this suggestion of the great chemist of Stockholm, as is so often the case, remained unrecognized for nearly three-quarters of a century. Biological chemistry, as founded by Justus Liebig and his school, occupied itself in the study of the various constituents of the fluids and tissues of the body, the products of cell activity, and the isolation of an enormous number of crystalline chemical individuals. This material, so laboriously collected and studied and the methods devised for the isolation of these bodies has led to the synthesis of numerous highly complex and important constituents of plants and animals. The restatement, however, of the similarity of enzymes and catalytic action by physical chemists some years ago marked the beginning of a great advance in biochemistry, as it attracted to it the attention of some of the most exact chemists of the present time. The hypothesis that catalytic action in the laboratory and enzyme action which results in oxidation and hydrolysis in living tissues are identical, has incited physical chemists on the one hand to make a thorough investigation of all the phenomena connected with catalysis and the action of colloid bodies, and it has given on the other hand, a scientific working hypothesis regarding enzyme action to the students of biochemistry. That the vital processes of the body, both in health and disease, are largely dependent upon the presence of enzymes, becomes more and more apparent as these processes are more thoroughly studied and that this action is catalytic in character explains how such extensive oxidation of carbon and hydrogen in the processes of respiration, and such extensive chemical changes as those which occur in digestion and assimilation, can be carried on in the bodies of animals so rapidly and at so low a temperature. There is, however, a marked distinction

between the chemical reactions in living tissues and those which we perform in the beaker and test-tube, and it is this, that living tissues manufacture in some unknown way their own catalyzors. Apart from this, one can find in their presence in living tissues no specific difference between the chemistry of living and inanimate matter.

Bredig and his pupils a few years ago at Leipzig and Heidelberg, found a method of preparing gold, silver, platinum and certain other metals in such a finely divided state suspended in water that these substances became known as colloid metals, from their similarity to solutions of animal and inorganic colloids. The metallic particles in these mixtures were so fine as to be far beyond the range of the ordinary microscope, and only recently have they been detected by the use of the ultra microscope, whose powers of amplification are so great that it is able to detect a particle only 1-500th of the smallest particle which can be recognized by the highest power of the ordinary microscope. The behaviour of these colloid metals is so similar to that of the ordinary enzymes, that they have received the name of the Inorganic Ferments. They are not only powerful catalyzors, but, like the living enzymes, they are extremely sensitive to the action of heat and poisons. A very minute quantity of such a poison as hydrocyanic acid is found to be as fatal to the action of the inorganic as it is to that of the organic ferment. While one cannot help questioning the right to call colloid gold, silver, etc., inorganic ferments, and speak of poisoning them, yet the effects obtained through their agency has thrown a flood of light upon the manner in which a colloid can act as a catalyzor in solution.

The great Leipzig chemist and physicist, Ostwald, has made many valuable contributions to our knowledge of the action of colloids and catalytic agents generally, and by him it was first pointed out that catalytic agents do not initiate but only tend to accelerate chemical action. We find this is also true of enzyme action. Processes of hydrolysis and oxidation which occur with such regularity and rapidity in the presence of enzymes also occur in an irregular extremely slow manner when the enzyme is absent, and the reaction rarely proceeds to completion.

One of the fundamental principles recognized in connection with chemical reaction is that principle which is termed the Influence of Mass, that is to say, that the relative mass of substances entering into a chemical reaction influence the proportion of the various products of that reaction. Reactions may cease before all the substances on the one side are converted into substances on the other side, as we would represent it in a chemical equation; and the whole system comes into

what is known as a state of chemical equilibrium. The original reaction, indeed, may be completely reversed by changes in the physical condition or the mass of the reacting bodies. Now, if enzyme action is identical with chemical reaction under the influence of catalysis, it follows that we should expect to find that enzymes were capable of bringing about reversible chemical reactions. Such is the case.

A few years ago, Arthur Croft Hill, an English physiological chemist, completely altered the views of physiologists regarding tissue metabolism by showing that the same enzyme maltase which converts maltose to glucose in dilute solution, also aids in the reversed reaction, viz., the conversion of glucose to maltose, when the solution contains 40 per cent. of glucose. The enzyme which saponifies fats and ethereal salts called lipase, by breaking them up into glycerine and fat acids, also accelerates the union of fatty acids and alcohols to form ethereal salts. The saponification of these ethereal salts by the enzyme lipase has been studied quantitatively, and it has been demonstrated that these reactions follow the mass law of chemical reactions as regularly as if their saponification were carried out in the laboratory through the influence of strong alkalies or acids. Such a reversing action has not been demonstrated for other enzymes although it is possible they may have the same power. If this prove to be the case, and this capacity of bringing about reversed reactions is one common to many or most enzymes their obvious function in the cells will be enormously extended.

Let us take for example, a proteolytic enzyme, it would not only aid, as we know it does, the breaking down of the molecules of proteids, but also become an agent for synthesizing proteids from peptones and building up the cells, absorbing energy and assisting in maintaining the chemical equilibrium between the cell contents and its surroundings.

A very interesting development in connection with the chemistry of enzymes, is the relation of the form of the molecules, that is the arrangement of the atoms in the molecule, to enzyme action. This relation of the structure of the molecule to its biological action, was thought by Pasteur many years ago to be capable of throwing much light on the nature of fermentative changes, and generally on the nature of life itself. Emile Fischer in his classical researches on the sugars, showed some years ago that the relations between the configuration of the molecule and its fermentability by yeast could be demonstrated by graphic formula. He found that only sugars containing three or six carbon atoms are capable of alcoholic fermentation, and of the possible hexoses, that is, sugars with six carbon atoms, only three are fermentable. Fischer graphically describes his results by saying that:

“Only if the enzyme and the fermentable substance have a similar geometrical shape can two molecules approach each other near enough for the production of a chemical reaction. Metaphorically, we may say that enzyme and glucoside must fit into each other like lock and key.”

To summarize, we find, then, that chemical action in the living cell is transformed and assisted by the action of bodies behaving like enzymes or ferments. These enzymes act either alone, physiologically distinct, or in groups, accelerating decomposition and, perhaps, synthesis. We have found that in turn the enzymes perform their functions in a manner identical, so far as investigation has gone, with the action of the so-called catalytic agents in the laboratory, and that the changes accelerated by them are of a purely chemical character, the only obvious difference being, that the cell prepares in some unknown way its own catalyzor.

We are now brought face to face with the more fundamental question as to how catalytic agents assist in bringing about chemical change. This question is one which cannot, perhaps, be as yet completely answered. There are few problems in physical chemistry more interesting or more complex than some of the phases of catalytic action. No one theory has yet been put forwards to explain all forms of catalytic action. It is recognized in one case that catalysis is due to one cause of factor, and in another case to a wholly different one. There are several theories which are by no means incompatible.

One of the earliest explanations was that advanced by Liebig and subsequently revived under another form by Nageli, namely that catalytic agents aided chemical action by a peculiar molecular vibration which induced vibration in the molecules of other substances, thus destroying the stability of these molecules and increasing the velocity of chemical action. We are quite familiar with similar phenomena in chemistry and in physics, *e.g.*, one vibrating tuning fork induces vibration in another which produces the same note; chemical action can be accelerated by mechanical vibration or friction; chemical combination with explosive effect is induced by the shock of detonators, etc. This theory is treated by physical chemists of to-day with scant courtesy; still molecular kinetics may afford an explanation of a certain number of forms of catalysis.

Many catalyzors act by forming unstable intermediate compounds which break down leaving the agent itself unchanged to again form an unstable body from another molecule and so on. To this group

belongs a great many of the enzymes and chemical catalyzors. There are, however, others which, so far as we know, have a purely physical effect. These tend to bring about combination by a process of condensation or solution upon the surface or in the interior of the particles. In this way act platinum black, the colloid metals, hot porous bricks, etc. Catalysis of this sort is characteristic of colloid bodies generally the "solution aggregates" which are present in solutions as ultra-microscopical particles.

The mode of action of colloid bodies has in recent years been most prominently put forward and the chemical kinetics of the reactions under such conditions has been the subject of numerous papers by German physical chemists, chiefly in the laboratories of Bodenstein and Bredig. Measurements of the rate of reactions of such heterogeneous systems are excessively complex, involving the application of the most advanced principles of mathematics and requiring years of patient investigation. The problem of how various concentrations of the colloid mixtures alter the relationships of, and attractions between solvent and colloid and so alter reaction velocities have a most important bearing on chemical action in protoplasm. Problems such as these are engaging the attention to-day of many of the advanced physical chemists of Europe.

This form of catalysis is, strictly speaking, only one of the manifestations of Surface Energy, of which the surface tension of liquids, capillary attraction, the condensation and absorption of gases by charcoal are familiar examples. Problems involving phases of surface energy have been found extremely difficult, so difficult, indeed that few but the giants among physicists have seriously attempted their solution. Nevertheless, the physical studies of some of the phenomena of surface energy, as manifested in emulsions of liquids in liquids such as milk and fats in alcohol and water, and those emulsions of gases in liquids called froth and foam, have thrown very considerable light upon the development of the cell wall. In mixtures of liquids of different viscosity such as albumens and water, Ramsden, about a year ago showed how masses of protoplasm must form solid films on their own surface, from purely physical data, and the results of experimental measurements.

As pointed out by Loeb in his recent treatise on the dynamics of living matter, the most natural and rational of the purely physical explanations of protoplasmic motion, muscular contraction and work, is that this movement is a phase of surface energy. We are familiar with the particles of camphor spinning upon the surface of water from

changes in surface tension, and how a drop of oil almost instantly covers the surface of water upon which it is dropped. Now, the movements of an amœba can be imitated by the variation in surface tension brought about by a drop of olive oil slightly acid with fat acid on a dilute solution of sodium carbonate. Amœboid movements of protoplasm can be accounted for similarly by variations in the surface tension of different portions of the living mass. This may be brought about by differences in concentration caused by solution, oxidation, absorption of surface membrane, etc. Such a theory, of course, affords no complete explanation of muscular energy, but one cannot help thinking that this phase of surface energy plays no small part in the physical manifestations of life.

I have dwelt thus somewhat at length upon enzyme action, not only on account of its importance, its general applicability, and its relations to infection and immunity, but largely that I might illustrate the general trend of research in medicine to-day. The most striking characteristic of investigations in medicine of the twentieth century, as compared with those of the nineteenth, is the more complete development of the scientific method. Medicine in her advances now seeks guidance by the finger of science, and is rapidly becoming emancipated from the rule of thumb. We hear to-day much less of that much abused word "practical," and, as a consequence, there is more search for these truths which lie at the very roots of the bedside problems, even though the practical application seems remote or even impossible.

In the great centres of medical research and instruction, both in Europe and America, bio-chemistry, physiology and pathology are receiving more and more attention. These sciences are so extended in their scope that they embrace mathematics, physics, chemistry and biology on the one hand, and clinical work on the other. In Germany we find the new hospitals provided with bio-chemical laboratories, living laboratories, not only costly piles of bricks and mortar, but working entities. Problems come to the laboratories gathered at the bedside in the hospitals and the methods of the laboratory are becoming more and more those of the clinician. The wide gap which formerly existed between the laboratory and the ward worker is now in all centres of earnest work completely bridged over. The co-operation and co-ordination of the laboratory and the clinic alone leads to the higher and permanent type of work. Investigations in medical laboratories are largely based upon bio-chemistry, which seems to have taken up the thread of medical research where it has been lost to the highest powers of the microscope.

The goal of chemistry as an experimental science is to offer a complete interpretation of the constitution of everything animate and inanimate; but the goal is an ideal one. It marks the direction in which we travel, but never the spot we shall ever actually attain. For, as the late Kingdon Clifford says, "Scientific thought is not an accompaniment or condition of human progress, but human progress itself."

A CASE OF BLENNORRHEA NEONATORUM FROM THE BACILLUS COLI COMMUNIS.

BY

S. HANFORD MCKEE, B.A., M.D.

Some weeks ago I was called to see an infant suffering with a severe purulent conjunctivitis of the right eye.

The child was four days old, and the history was that the eye had become inflamed and began discharging the day before.

The clinical picture was—severe swelling of the lids, with profuse purulent discharge, œdema of the bulbar conjunctiva, blennorrhœa neonatorum. The cornea was intact. The left eye was not involved, so was immediately protected. Smears were made and media inoculated. The stained side showed a few Gram positive bacilli—the xerosis—and numerous Gram negative bacilli which looked like the colon bacillus. The gonococcus was not present.

The treatment ordered was irrigations of the conjunctival sac every half hour with warm boracic solution.

The discharge gradually ceased, and on the fifth day the eye was quite well.

The media inoculated gave growths of the bacillus coli communis with a few colonies of the xerosis bacillus.

The case is of interest, inasmuch as the infection was caused by the bacillus coli communis, but gave the clinical picture of the blennorrhœa set up by the gonococcus.

Axenfeld reported a case in 1896, and later Bult. They both emphasize the fact that blennorrhœa from the colon bacillus runs a much milder course than blennorrhœa caused by the gonococcus.

We extend our hearty congratulations to Professor T. G. Roddick, Dean of the Faculty of Medicine, upon the occasion of his marriage to Miss Redpath of Montreal, at Chiselhurst, England.

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THE ADDRESS IN MEDICINE.

The address in medicine before the British Medical Association was delivered this year by Sir James Barr, the well known senior physician of the Liverpool Royal Infirmary.

He chose as his subject "The Circulation viewed from the Periphery." He pointed out at the beginning of his discourse how many diseases of the heart originate in causes having their seat at the periphery. He claims that until recently the peripheral circulation has been left largely to the physiologist and pathologist, and that the clinician who would advance in knowledge must pay increasing attention to their teachings. "The man," he says, "who only studies the circulation with the aid of a stethoscope is a positive danger to society."

The average reader feels quite at ease in following the lecturer when he speaks of such peripheral symptoms as cyanosis, pallor and cold extremities; but the greater part of the lecture deals with much

more abstruse subjects. The lecturer considers in order the capillaries, veins and arteries, and describes methods of estimating the lateral pressure and blood velocity in each kind of vessel, and at all parts of the body surface. He also discusses the viscosity of the blood, and points out how it varies as the result of many modifying influences, being diminished by fever and increased by carbonic acid gas, diminished by salts of potassium, sodium and ammonium, and increased by those of calcium, magnesium and strontium. It also varies, he tells us, with the number of corpuscles, and under the influence of certain internal secretions like that of the thyroid gland.

He expresses himself rather strongly on the question of lymph formation. He is a strong supporter of the so-called mechanical school, and with them explains all by filtration, osmosis and varying intracapillary pressure. He is guilty of an apparent inconsistency in this connexion, for on one page he supports Runeberg's view that a colloid filtrate is most concentrated at low pressures, and on the next page he partly explains the deficiency of proteids in the cerebro-spinal fluid by the low pressure in the cerebral capillaries.

He describes the structure and nervous connexions of the vessels in all the important areas of the body, such as brain, lungs, heart, liver and kidneys, and brings together a vast amount of material bearing on these points.

The chief novelty in his lecture, however, is the way in which he attempts to estimate the velocity of the blood flow in the capillaries and veins, and also the pressure exerted by the blood on the walls of these vessels. On some of these points we are constrained to feel that, like some of Browning's heroes, his art gives way, his reach exceeds his grasp.

For instance, he tells us that the velocity in the capillaries is thirty or forty times what it has been estimated at by the most careful physiologists, and we must confess that the methods by which he has reached this remarkable conclusion impress the ordinary reader as very uncertain. He estimates the rate of flow in the capillaries by compressing all the blood out of a small area and observing how long it takes to return. He fails to realize that he is introducing most abnormal conditions. While the compression is applied the capillaries are empty and the pressure within them, when it is removed, is practically nil. The blood is then allowed to flow into them from both ends at once, from both arteries and veins. We cannot believe that Sir James will long continue to base any arguments on such a fallacious method as this.

His arrangement for estimating the velocity in the veins is very similar and will not, we think, be generally employed. We also fail to grasp some of his statements with regard to intravascular pressure. He tells us that the pressure in the veins may be greater than that in the capillaries without interfering with the onward flow of blood, and also that during the systole of the ventricle there is very little lateral pressure exerted upon the walls of the aorta. If such were the case we cannot see how the aorta would become distended as it certainly does.

We mention these points simply to indicate that this very erudite and deep discourse must be perused very carefully, as the way is beset with pitfalls for the unwary.

At the same time Sir James Barr has done us all a most valuable service in pointing out the absurdity of thinking that we have examined the circulatory system when we have merely percussed the heart and listened to its sounds with a stethoscope. On the contrary, a careful examination of the arteries, capillaries and veins can often throw most valuable light on the conditions present.

As Sir William Broadbent remarked at one of the meetings of the medical section, we must not unduly elaborate our technique, but we hope that as attention becomes more directed to the periphery, some simple yet efficient means may be evolved for obtaining the necessary data. There is certainly a wide field open here to him who "through long labours hunteth after fame."

STERILIZATION OF DEGENERATES.

At the Toronto meeting of the British Medical Association, Dr. Rentoul of Liverpool returned to his propagandism of the practice of eunuchry. Dr. Rentoul's appeal to the facts is irresistible. By the British census returns for 1901 it appears that there were 60,721 idiots, imbeciles and feeble-minded; and of these 18,900 were enjoying the blessings of matrimony. The same census showed that there were 117,274 lunatics, of whom 46,800 had been married. This evidence is quite strong enough without appealing to the authority of Dr. "Lydson" of Chicago.

Dr. Rentoul, it appears, is meeting with opposition in his propaganda, and he informs us that no less than ten firms had refused to publish his monograph. We would comfort him by the experience of St. Paul. That great reformer also complains that he had encountered persecution for his teaching in connexion with another operation upon those

parts; and, though not precisely a humourist, he permits himself to employ a rough jest against the advocates of circumcision: "I would they were completely cut off which trouble you"—that, we believe, to be the full significance of the term in the original Greek, if Messrs. Liddel and Scott inform us correctly.

We had always regarded the sterilization of an individual as a considerable surgical procedure; but it appears from Dr. Rentoul's account that the operation is so trivial as to be almost cosmetic in its simplicity.

If the method become a well established usage in the profession, its benefits may be sought by those who are not entitled to the immunity which it confers, just as applicants are continually applying to the Society for the Prevention of Cruelty to Animals for the courtesy of their lethal chamber. Surgeons have troubles enough refusing permits to enter hospitals, certificates of disability, orders to purchase intoxicants, without being obliged to offend their patients by declining to render them the slight office of performing a vasectomy.

What with the incapacity or disinclination of more intellectual persons to propagate their species, if the more weak-minded are deprived of that duty, the end of the race is in sight, and we may look for the coming of those events described in "The Last Man" by the poet Campbell. Certainly Cowper would surely not have escaped the knife had the practice of vasectomy been in vogue in his day. There is no evil without its remedy, and if the melancholy poet were face to face with such a contingency, he could plead "eye-strain" and appeal to Dr. Gould.

There be eunuchs, we read, which have made themselves eunuchs for the kingdom of heaven's sake. Let Dr. Rentoul be encouraged in the practice for the sake of the human race if thereby it can be improved.

MEDICAL INSPECTION OF SCHOOLS.

The first attempt at the medical inspection of schools in Montreal, which was made a year ago, ended in fiasco. A second attempt will be made at the beginning of this month. At the present moment 41 physicians have signified their acceptance of the positions of inspectors. There are in the schools 53,000 pupils, a number which will give to each inspector the supervision of 1,300 cases in 72 schools. The remuneration amounts to sixty cents a day for each physician, which does not seem to be excessive for so considerable an undertaking; yet

it is an advance upon the previous rate, which was thirty cents an hour, a wage which we remarked at the time was appreciably less than the emolument of a cab-driver.

The specific terms of the engagement which govern the physicians are not available, and we cannot say whether the work is one of charity or of fair recompense for services rendered. If this is a charitable scheme we think that parents should be informed of the fact, as there are yet some persons who have an aversion to accepting charitable assistance.

The hospitals are doing a great work in educating the public into the belief that the profession exists solely for its gratuitous aid, and this new experiment will be a further demonstration of the veracity of that supposition. No man lives for himself. We can only hope that this new expression of our willingness to serve will hasten the day when the parents of these children—many of whom are trustworthy plumbers and excellent grocers—will adopt so noble an attitude, and minister to our necessities with the single aim of doing good.

In common with other good citizens, we desire to be sharers in the high privilege of paying for public education, and certain documents which come to hand on the first day of November will remind us of our prerogative. We do not, as a profession, object to bearing this new burden of medical inspection alone, but merely express our willingness to share it with other members of the community.

THE TELEPHONE.

A judge of a Massachusetts court, in ruling upon a case of alleged misdemeanour which a husband brought against his wife for persistently calling him by telephone, delivered this *obiter dicta*:—"I think that one having a telephone in his house could enjoin a person from continuously ringing him up day and night upon unimportant matters which he had no right to do, to the loss of sleep and rest to the occupant and to his great annoyance."

A physician who had returned from his holiday was obliged to spend a day in his house setting his correspondence in order, and conceived the happy idea of tabulating his telephone calls. He has favoured us with a copy of the schedule, which is too complicated and exhaustive to be reproduced *in extenso*, but a few extracts will be instructive in showing the degradation to which the useful service of telephony has fallen.

The period of time covered by these observations was from eight in the morning till eight at night. The total calls numbered 37, being a fraction over three per hour. Under the heading "wrong number" there are three entries; "never mind, I will call you again," there are two; "one minute, please: Mr. Blank wishes to speak to you," there are six; "how long will you be in," there are five; "cook," one; "furnace-man," one; "housemaid," two; "tradesmen," two; "miscellaneous," two. This makes 22 calls, leaving a balance of 15, the origin of which is not specified, but, presumably, they have to do with the practice of medicine.

Analysis of these statistics yields some interesting results; but the heading "how long will you be in" includes cases of the worst abuse. This is a device which persons employ, whose opening formula, when they call, is: "I do not wish to consult you professionally."

It is only in a moment of petulance that a man would deprive himself of the benefits inherent in the telephone service. But that service has the defects of its excellence. If there be but one instrument in the house, and that one on the desk, the physician is at the mercy of every individual within a radius of a hundred miles who chooses to call him. It does not tend to composure when an examination is in progress to have the telephone bell roaring; nor does it make a patient more amiable, to be interrupted in his relation by a conversation carried on between the physician and an unseen person, whose tenor, no matter how well concealed, may have to do with a game of golf or some other subject equally foreign to the patient's immediate concern.

It is quite true that one may have a private telephone, the number of which may be given to those who are entitled to it. The name may or may not appear in the book. That was the practice which the late Dr. Craik employed at one time, but it is open to the disadvantage that persons having legitimate business are unable to avail themselves of the service.

A better way, it appears to us, would be to arrange a system by which a telephone might be available to the public during certain hours of the day, and private the remainder of the time. Such an arrangement would not inconvenience regular patients who would have access to their physicians at all times. Other persons having legitimate business to transact could easily call during the specified hours, and the physician would be spared those wanton inroads upon his time which make consecutive work impossible.

A year ago we had occasion to mention with commendation the conferring upon Dr. Shepherd by the University of Edinburgh of the degree of

Doctor of Laws. Again it is our privilege to felicitate the Professor of Anatomy upon the excellent company in which he found himself at the opening of the Harvard Medical buildings, where he was honoured with the same degree along with Charles A Coolidge, Boston; Dr. Simon Flexner, Rockefeller Institute for Medical Research, New York; Dr. John Collins Warren, Harvard Medical School; Dr. H. P. Bowdith, Harvard Medical School; Dr. Don Jose Ramos, Instituto Medico Nacional, Mexico; Dr. Franz Keibel, University of Freiburg, Germany; Dr. Charles S. Sherrington, University of Liverpool, England; Sir Thomas Barlow, University of London; Dr. Abraham Jacobi, emeritus professor College of Physicians and Surgeons, New York.

THE FIVE YEARS' COURSE.

The Calendar of the Medical Faculty of McGill University for the session of 1906-07 contains an inset printed in red which is significant. The notice reads: "It is proposed by the University to establish a *Five Years' Course* for the Degree of Doctor of Medicine and Master of Surgery, beginning in the Autumn of 1907. Further notice with full details will appear in the Calendar of 1907-08."

At the last meeting of the College of Physicians and Surgeons, held on the 26th of September, a resolution was adopted that the by-laws of the College be altered so that a five years' course could be exacted from all candidates for provincial registration. If the Legislature confirms this resolution, the five years' course will become a legal necessity as well as a University regulation.

In so far as patients suffering from erysipelas are concerned, Montreal is yet without a hospital for contagious diseases. This is in face of the fact that two new hospitals for that specific purpose have been opened within the year at a cost of half a million dollars. In time accommodation will doubtless be provided; but at the moment the plea is that the governors of the Alexandra Hospital are without funds to provide an isolation ward for cases of this kind. The public subscribed handsomely, and will not willingly listen to new demands. In the meantime the governors might be reminded of the justness of the maxim that one should cut his coat with some reference to his available material.

We regret that through inadvertence and from no intent to forestall a contemporary journal to which we are indebted for not a few favours

in the past, the article by Dr. Adami upon the Dominance of the Nucleus was published in our last month's issue in advance of its publication in the columns of the *British Medical Journal*. Even if we do not entirely agree with the wisdom of a rule, we desire to conform to it whilst it is in force.

The profession of medicine in Prince Edward Island has lost its leader in Dr. F. P. Taylor, who died at Charlottetown on the 17th of September, 1906. Dr. Taylor had practised in Charlottetown since the year 1879, and won for himself the regard and affection of the profession and of the public. He was an accomplished physician and a skilful surgeon. He was well known also to the profession in Montreal, where he was in the habit of making frequent visits.

In the account of the proceedings before the Pathological section of the British Medical Association at Toronto published in this number the following paragraph should have been inserted:—Professor J. J. MacKenzie, of Toronto, gave a lantern demonstration of the changes produced in large arteries by his pupil Harvey, as a result of painting the outer coats of the artery with a silver nitrate solution. In one case they had obtained definite bone formation in the adventitia.

The experiment of conducting a hospital without a medical superintendent has proven a failure at the Kingston General Hospital, and the governors have decided to return to the former system. The plan of having a lady superintendent and a medical board did not work with any degree of satisfaction.

Dr. John L. Todd, a graduate of McGill, who is well known for his researches on Sleeping Sickness in the Congo States, has had the Order of Leopold conferred upon him by the King of Belgium.

RECIPROCITY WITH GREAT BRITAIN.

At the last meeting of the College of Physicians and Surgeons of the Province of Quebec the first step towards reciprocity with Great Britain, in the matter of medical degrees, was formally made.

It appears that, during the July meeting, a letter was read from Donald Macalister, President of the General Medical Council of Great Britain, which had been addressed to a private individual having no official connection with the College.

As this letter appears to have brought the discussion to a head we think it worth while to print it as it was read:—

“I agree with you entirely that reciprocity with Great Britain and interprovincial reciprocity are entirely separate questions, and should be dealt with separately. The former under the new law can be dealt with at once, without waiting for any reconstruction of the Medical Administration of Quebec.

“The one thing essential for a successful application to the King in council, is—that Quebec is prepared to allow duly qualified British practitioners to register and to practise in Quebec without further examination. In other words, that possession of a registered British Diploma shall admit to the Quebec register in the same way as if the holder had a degree from McGill or Laval. If this assurance is conveyed to the Privy Council by the “Provincial Government,” along with their application to have the British Medical Act, Part II, 1886, applied to the Province, I am prepared to advise the Privy Council that the application should be granted.

“There is no need to wait for a Central Examining Board, there is none such in the Australian States, or Italy, or India, which already enjoy reciprocity.

“Supposing the Privy Council grant the application, the next step lies with the General Medical Council. It has to decide what Quebec diplomas shall admit to the British Register. In accordance with precedent it will probably decide that any medical degrees granted in the Province which are registrable in the Provincial Register shall be registrable here. In no case hitherto, where a country or province (*e.g.*, New South Wales or India) has been admitted to reciprocity, has the Council discriminated between the several local universities, and accepted some while it refused others. But it is of course just possible that the Council might refuse to recognize a four years' course—though if that is the rule throughout the Province, and there is no higher standard available, the result would be to render the reciprocity granted by the King in Council a nullity. Such a result would not, I think, be contemplated for a moment by the Council; and if it were, the Privy Council has power to prevent such a fiasco, and could, without more ado, order the Medical Council to register Quebec Degrees. In my opinion, this is the course that would be taken, and justifiably so; and the knowledge of its possibility and probability which the Medical Council possesses should remove any hesitation on your part as to whether the Council would act reasonably or not. It appears to me that the fact that the Quebec College of Physicians is primarily a

registering and supervising body, and not an Examining Body, makes the procedure simpler and easier because it is on the lines of all existing precedents. For this reason I should much prefer that Quebec should be the first Province to apply. The Examining Board provinces would raise other question of a novel kind, for which our past experience would be less useful."

Coupled with this the two following resolutions were offered in the form of notice of motion:—

"That the College of Physicians and Surgeons of the Province of Quebec beg the Legislature of the Province of Quebec at its coming meeting to send a request to His Majesty's Privy Council demanding the application of the Medical Act of 1886 and the amendments of 1905 to the Province of Quebec."

"That upon a favourable answer from the Privy Council, the College of Physicians and Surgeons of the Province of Quebec enter upon the necessary negotiations with the General Medical Council of Great Britain, in order to assure the establishment of reciprocity between Great Britain and the Province of Quebec."

At the meeting held on 26th September the former of these two resolutions was adopted; and to the latter a proviso was added, and the whole agreed to with only one dissenting voice. This clause as accepted reads:—"Pourvu que ceux qui, ayant obtenu la licence britannique, demanderaient la licence du Collège de la Province de Québec, aient au préalable de leur enregistrement britanniques satisfait à toutes les exigences de notre loi médicale pour l'obtention de notre licence."

Of that clause we offer this as a translation:—"Provided that those who, having obtained the British Licence and are demanding the License of the College of the Province of Quebec, shall prior to their British Registration have fulfilled all the requirements of our Medical Act in regard to the obtaining of our license.

This proviso was proposed by the President, Dr. Lachapelle, with the explanation that it was intended to prevent "irregulars" in the Province from going over to Great Britain and coming back with a British Registration, which would compel the College to give them the Quebec License notwithstanding their irregularity.

With this proviso coupled with the explanation of the President we have no fault to find. When the matter comes to be dealt with at close quarters it will doubtless be made clear that the object is to prevent deliberate evasion of the regulations of the College—not to nullify the value of reciprocity. It now remains for the Legislature to give effect to these resolutions by the necessary enactments which

will bring to an end a controversy which has troubled the profession for many years.

Reviews and Notices of Books.

A NON-SURGICAL TREATISE ON DISEASES OF THE PROSTATE GLAND AND ADNEXA. By GEO. W. OVERALL, A.B., M.D. Chicago: Rowe Publ. Co., 1906.

The reviewer, having lost a certain amount of time in reading this book, finds himself at the end willing enough to express his opinion of it. It is, as a matter of fact, a most entertaining book when looked at from the standpoint of style and spelling; and will be read with pleasure by those whose studies have tended more towards electricity than pathology. The book ought, really, to have been published in serial form in *The Medical Brief*, or *The Alkaloidal Clinic*. There the author might have found more numerous and more appreciative readers; at any rate, might have found many to enjoy the colloquial case-report so characteristic of those journals. We may be pardoned for quoting in part one of the gems of the collection. "I recall one case who said the first time he had his attention called to any defect in his left foot was by his wife, when walking upon the street, when she said: "Will! for goodness sake, quit scraping your foot on the pavement." It turned out that the gentleman in question had developed a left hemiparesis. Dr. Overall lost some time at first in treating his spine with electricity; but, fortunately, soon got upon the right track, treated his prostate with various forms of "electrical force," and cured him.

The mention of this matter brings us to the question of treatment. Here the reviewer must refrain from judging, and confess ignorance. We know, personally, nothing of the sinusoidal current in the treatment of "Neuroses of the Prostate." We hardly even knew that the prostate might be neurotic. We know nothing, or practically nothing, of the treatment of hypertrophied prostate by the "use of cataphoresis with one per cent. solution of thuja through the prostatic urethra." We did think we knew something of tuberculosis of the prostate, but Dr. Overall informs us that the thing does not exist; in fact, that it is a mere diagnostic city of refuse for those who have failed to treat successfully "chronic prostatitis." Our ignorance, it appears, has been both positive and negative, if the kind reader will take our meaning.

Electrolysis, cataphoresis or electric osmosis, high frequency and high potential currents in the treatment of prostatic diseases, solenoids, resonators, detonators, the sinusoidal current,—these are the play-words, so to speak, of our author; and they may very possibly represent valuable forms of treatment when applied by means of the fifteen or sixteen odd instruments which he has devised. We simply do not know. Only we hope that his electricity is better than his pathology.

E. A.

THE EXTRA PHARMACOPEIA OF MARTINDALE AND WESTCOTT. Revised by W. HARRISON MARTINDALE Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B., Lond., D.P.H. Twelfth Edition. London: H. K. Lewis, 136 Gower Street, W.C., 1906. 1075 pp., 24 mo. 10 shillings net.

The eleventh edition appeared, if we mistake not, two years ago, and the present volume contains many valuable additions, so that, in fact, there are over two hundred additional pages. The book, a volume of $5\frac{1}{2}$ by $3\frac{1}{2}$ inches, contains an amount of information that is surprisingly great, which is not by any means restricted to purely pharmacological data, but contains therapeutic knowledge in the very widest sense of the word. For example, the preparations of the different animal organs, and of antitoxins with small text references in regard of their use from the literature of the present year, are given. A part of the book is devoted to analytical memoranda, containing most useful information on the composition and use of various stains, and biochemical reactions; bacteriological examinations are dealt with in a way that appears to be brief but eminently practical. These are but some of the addenda to the previous edition, which is so well known as to require no special mention. The book is a wonderful aggregation of useful information in the smallest possible space, and we anticipate much profit from keeping it at hand for reference; it can be enthusiastically recommended.

LECTURES ON MIDWIFERY FOR MIDWIVES. By A. B. CALDER, M.B., M.R.C.S., Lecturer on Midwifery to the London County Council, etc., etc. London: Ballière, Tindall and Cox; Toronto: J. A. Carveth & Co. \$1.50.

The book is composed of fifteen chapters, each containing the substance of a lecture. The first ten deal with the normal anatomy, physiology, and the hygiene of pregnancy; the mechanism and phen-

omena of labour; and the management of labour and the puerperium, including breast and bottle feeding. Three further chapters are concerned with abnormal anatomy, abnormal labour and puerperium, and the abnormal child, while special chapters were devoted to sepsis and asepsis and to sanitation, under which is included the consideration of certain features of the Midwives Act.

In the definition of "presentation," "presenting part," etc., there is some excusable confusion which is remedied a little further on, and we confess surprise at the repetition of "*obdurator* foramen" and "*vila-mentous*" insertion of the cord.

The chapter on sepsis and asepsis is particularly good and embodies all accepted facts without unnecessary dogma. After detailing the strongest arguments for and against vaginal douching, the responsibility of decision is left with the attending physician, and the nurse or midwife is advised to obey his instructions rather than her own inclination.

Medical News.

McGILL UNIVERSITY.

Official figures of the attendance at McGill, up to the close of the month of September, show that in the four faculties of Arts, Applied Science, Medicine and Law, the number of students enrolled is 1,207 as compared with 1175 last year.

The following comparative statement shows the attendance in the Faculty of Medicine during both years:—

	1905	1906
Fourth year	97	81
Fourth year	76	94
Second year	99	91
Third year	76	94
Partials	7	4
Total	353	363

ROYAL VICTORIA HOSPITAL.

Monthly report for September:—Patients admitted, 242; patients discharged, 243; patients died, 13. Medical, 84; surgical, 101; ophthalmological, 7; gynæcological, 28; laryngological, 22. Out-Door Department — medical, 826; surgical, 707; ophthalmological, 389;

gynæcological, 131; laryngological, 457; total, 2,510. Ambulance calls, 96.

Returns received at the Board of Health Office of Ontario, for August, from 745 division registrars, representing a population of 2,091,183, give a total of 2,570 deaths from all causes, which is at the rate of 14.2 per 1,000. For the same month of last year 2,200 deaths were reported in a population of 100,000 less. Contagious diseases show ten cases and no deaths from small-pox; 45 cases of scarlet fever, and six deaths; diphtheria, 125 cases, and eight deaths, compared with 132 cases and 21 deaths in August, 1905; measles, 35 cases, and seven deaths; whooping cough, 119 cases, and 21 deaths; the figures for August, 1905, being 141, and 16 respectively; typhoid, 276 cases, and 72 deaths, compared with 256 and 43. Tuberculosis was responsible for 177 deaths, the number of cases being 180. For the corresponding period of last year there were 153 cases and 147 deaths from tuberculosis.

Advantage was taken of the presence in Montreal of Professor Charles Monod to offer him an entertainment by his confreres, in recognition of his high services to surgery in France. At the dinner which was held at the Club Lafontaine, much cordiality was displayed. The entertainment was in a degree directed also towards his son, Dr. Fernand Monod, who has secured so warm a place in the affections of the profession since his coming to Montreal. Dr. Monod, the guest of the evening, proposed the toast of Laval and McGill. For McGill, Prof. J. C. Cameron replied in a worthy speech, delivered, to the evident pleasure of the French half of the company in French. Among the English members present were Professors Gardner, Cameron, Birkett, Finley, Evans, and Drs. Hutchison, Garrow, H. D. Hamilton, Springle, England, Dorion, Gurd, Reilly, Craig, Gray and Archibald.

The composition of the new Board of Health for Ontario is as follows:—Dr. Charles Sheard, medical health officer, Toronto; Dr. Milton I. Beeman, Newburgh; Dr. John W. S. McCullough, Alliston; Dr. C. Bernard Coughlin, Peterboro; Dr. W. J. Robinson, Guelph; Dr. W. R. Hall, Chatham; Dr. C. A. Hodge. The permanent secretary will continue in that capacity with the new board. The term of the members, outside of the secretary, is three years. The old board passed out of existence on August 21 of this year, and none of its members were reappointed.

At the last meeting of the College of Physicians and Surgeons of Quebec the following medical graduates were admitted to practice:—J. J. Heagerty, Omer Camirand, Geo. Lonergan, John F. Beaulieu, Jean B. Prince, Eug. Verret, Henry Lemire, Geo. Migneault, Alf. Gaboury, Henry Cartier, Art. Lecere, Jean Bte. Piegay, O. Bellemare, Geo. Letendre, Eug. Arsenault, John David Ross, Emile Dion, Adolphe Drouin, J. Landry, Wilfrid Laroche, Geo. Fisher and J. B. Delage.

According to the Niagara Falls *Review*, tenders are being called for the proposed new hospital to be erected in East Sherbrooke. The plans are so arranged that the building can be added to. In the first instance the contract will call for an expenditure of over \$100,000, but the completed buildings as called for by the plans will mean an amount approaching \$300,000.

At a meeting of the American Surgical Trade Association, held in Philadelphia, in June, it was resolved that after January 1st, 1907, the trade adopt the French scale for all catheters, bougies and sounds. A committee was appointed for the purpose of preparing an accurate French scale card.

The new Mackenzie memorial wing, founded by the bequest of the late Elizabeth Mackenzie, wife of Lieut.-Col. J. F. Turnbull, has been officially inaugurated. The new wing, which is attached to the Jeffery Hale Hospital, cost \$100,000.

Lieutenant-Governor Dunsmuir has offered to give \$10,000 to a sanitarium for consumptives in British Columbia, provided the committees now working are successful in raising \$50,000 for the building and equipment.

The Buckingham *Post*, in its issue of the 31st September, gives much praise to the new hospital which has been erected by a religious order in that town.

Ground has been broken in Edmonton for the erection of a hospital for contagious diseases. It will be erected by the authorities of the town.

The meetings of the Montreal Medico-Chirurgical Society will be resumed on October 5th by a "smoking concert."

Dr. Minerva Greenaway died at Toronto, in St. Michael's Hospital, of typhoid fever, on the 27th of September. She was a graduate of the Women's Medical College in 1899, and took first-class honours at Trinity University. She afterwards took a post-graduate course for one year at a West Philadelphia Hospital. For the past five years she has carried on a successful practice in Toronto. Dr. Greenaway was a lecturer on the diseases of children at the Women's Medical College, Secretary of the Alumnae Association and lecturer to the nurses at the Orthopedic Hospital.

Dr. John Matthew Lefebvre died in Vancouver on the 16th September, after a short illness, at the age of 53. He was a graduate of McGill University, and chief surgeon of the Western Division of the Canadian Pacific Railway.

The death is announced of Dr. Edmund Moore at Salisbury, N.B., where he had practised for thirty-two years. He was born in Nova Scotia, and graduated from Dalhousie College in 1874.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

EDWIN BEER, M.D. "The Therapeutic Value of Artificial Localized Hyperemia in the Treatment of Ambulatory or Dispensary Cases." *Medical Record*, August 25, 1906.

This article is based upon some one hundred and fifty cases so treated, some ninety odd of which were by suction hyperemia alone. Review is also made of the published results and a very full bibliography appended. The writer used suction hyperemia as a prophylaxis against infection in perforating wounds of the extremities in eight cases and found it very efficacious. His other cases were, twenty-six cases of infected wounds and cellulitis of fingers or hands; thirty-five of furuncle, carbuncle, and abscess; six of acute suppurative adenitis; seven of acute bursitis, and of contusions (black eyes, etc.). He has also employed suction hyperemia in more chronic cases with success. In applying these suction cups to an inflamed part, two cardinal rules must be adhered to:—First, the procedure must not cause pain; second,

the suction must be intermittent, the cup remaining in place three or four minutes is removed for one or two minutes, and the process repeated for from thirty to forty minutes. In Bier's clinic suction hyperemia has been used with success in over six hundred cases of furuncles, carbuncles, buboes, cold and acute abscesses, mastitis, infected wounds, cellulitis, phlegmons of the floor of the mouth, insect bites, panaritria, and paronychia.

In addition to the method first described, hyperemia may be produced by constriction. Constriction hyperemia is produced by applying a thin rubber (Martin) bandage proximally to the part to be treated. By this means we may produce a marked or a mild venous hyperemia, the former cannot be borne with comfort for more than an hour, the latter for the greater part of the day with perfect comfort. Swelling of the part is present in both methods, but is more marked in the latter. After removal of the bandage a reactive hyperemia, arterial in character, sets in, and is more marked after the production of a high degree of venous engorgement. These two degrees of venous congestion must be kept absolutely separate, as they have special and very different usages. The marked venous engorgement is for chronic, whereas the milder degree is useful in acute conditions. The writer used marked venous congestion in twenty-nine cases of stiffness of joints following severe old contusions, or multiple healed incisions of cellulitic areas or fractures and found that pain was almost regularly relieved and motion of the part improved. Bier has drawn attention to the beneficial effect obtained by hyperemia treatment in a group of conditions usually following trauma which present no diagnostic features and which baffle the surgeon to relieve. The writer thinks that the arterial reaction, which sets in after removal of the constricting bandage, is probably very important and cites a case in point. Six cases of joint and bone tuberculosis treated with good results. Last year Bier advocated the use of a fiery red hyperemia produced by a light application of the rubber bandage in the treatment of acute inflammatory conditions. The bandage so applied remained in place ten hours in mild cases, twenty to twenty-two in more acute. Here, as in the other forms, the rule is that it must never cause pain, and between treatment the part is elevated to allow subsidence of the œdema. This method of treatment leads to rapid separation of unhealthy and dead structures from healthy. It preserves tissues which usually necrose, *e.g.*, tendons. In some cases it causes absorption without pus formation; in others it converts hot into cold abscesses. At times it leads to pus absorption without incision. It relieves pain rapidly.

Such are a few of the main observations Bier has made in cases of cellulitis, joint infection, acute osteomyelitis, and tendon sheath phlegmon. As a result of Bier's success, and of others who have followed out his directions, our ideas of the harmfulness of congestion must be modified. We have been accustomed to regard pain as the result of hyperemia, but we now see it relieved by congestion. The explanation is to be found in the fact that pain is produced by the irritation of the peripheral nerves by concentrated exudates, and that artificial congestion dilutes these exudates and in addition acts similarly to Schleich's infiltration. The antibacterial action is accounted for by the fact that in the treated part there is an increase in alkalies and carbonic acid, both in the blood and lymph; that there is a marked local increase in the number of leucocytes, and probably an increase in the alexins (enzymes). It has also been noted that there is a marked increase in the excretion of purin bodies in cures so treated which indicates a breaking up of numberless leucocytes. It has also been found that vessels which were full of leucocytes became dilated and the cells less numerous. Besides the analgesic and the antibacterial activity of localized oedemas we have a nutritive and a resorptive influence inherent in the process. In the stimulation of the periosteum we have an example of the nutritive, while in the loosening up of old adhesions we have instances of the latter.

ROBERT J. MILLER, JR., M.D. "The Results of Operative Treatment of Varicose Veins of the Leg by the Methods of Trendelenburg and Schede." *Bulletin, Johns Hopkins Hosp.*, September, 1906.

Varicose veins of the leg are not an incident of senility, the condition is rather a disease of young and middle aged individuals, over one-third of the cases appearing before the 20th year, and two-thirds before the 40th year. From an ætiological standpoint there are two classes, inflammatory and non-inflammatory. The former group included about one-third of all cases, phlebitis occurring as a complication sequel of pregnancy, post-operative convalescence or an acute infection, among which typhoid fever is the most frequent. The pathology of the non-inflammatory group is obscure. In 128 cases the right and left legs are affected in about equal proportion; over one-half of the cases are bilateral. Trendelenburg's operation cured 78 per cent. in a series of 41 cases; this is about the result generally reported. In the first four post-operative years 89 per cent. were cured; in the fifth to eighth years but 63 per cent. remained cured; the tendency to recurrence increases as the post-operative period lengthens. Schede's operation

cured 33 per cent. in a series of 9 cases. The tendency to recurrence is much greater after Schede's operation. Division between ligatures of the saphenous vein does not ensure permanent occlusion. The stream may be re-established in three ways, dilatation of anastomoses around the point of division, formation of varices in the scar, end-to-end anastomosis of the ligated stumps. The Schede operation is followed particularly by anastomosis of ligated stumps: of six cases three showed an intact saphenous vein running directly through the scar. Functional restoration of the saphenous vein may be, but is not always, accompanied by recurrence of symptoms. Resection of 8 cm. or more of the saphenous vein at the saphenous opening through a generous transverse skin incision is to be preferred to simple division of the vein. Post-operative embolism is rare, but has occurred between the fourth and thirteenth days.

JOHN CHALMERS DACOSTA. "Report of a Case of Tumour of the Carotid Body." *Annals of Surgery*, September, 1906.

The case occurred in a man of 52 years of age, who, for over twenty years, had noticed a small lump on the right side of the neck. During many years it slowly increased in size and then began to grow rapidly, and had attained the size of a hen's small egg during less than a year of rapid growth. He had some difficulty in swallowing, had attacks of redness of that side of the face, and occasionally suffered from pricking pain in and around the tumour. A differential diagnosis was made excluding aneurysm, misplaced thyroid tissue, sarcoma, fatty tumour, and lymphatic glandular enlargement. The operation was a difficult and severe one, attended by considerable loss of blood. The common carotid was ligated as well as the external and internal carotids and the tumour mass separated from surrounding tissues and removed. The internal jugular had also to be ligated, having been severely torn. Eight hours after operation he developed a weakness just short of complete paralysis of left arm and leg, the face escaping. He also had a low and hoarse voice, relaxation and œdema of left vocal cord due to injury of the superior laryngeal nerve. For some days there was a copious flow of mucus from larynx and bronchi, and, owing to the anæsthesia of the mucous membrane, he had great difficulty in expelling the mucus. On the eighth day after operation complete hemiplegia suddenly developed, and the man was dull, drowsy, and sometimes stuporous, but never unconscious. This condition was thought to be due to embolism, probably in the internal capsule, the first to thrombosis in the cortical vessels. The day after the onset of the

hemiplegia the man developed severe dyspnœa, and examination of the left lung showed it to be in a state of complete collapse over at least half the area. This was probably due to the anæsthesia of the larynx allowing plugs of mucus or food to pass into the bronchi. Eight weeks after operation the hemiplegia was fading, but the voice remained hoarse and low. The operation of removing a tumour of the carotid body is a very formidable one. In nearly all the reported cases ligation of all the carotids has had to be performed. The mortality for this operation, ligation of common carotid for aneurysm, is between 23 and 30 per cent. But this is not the only danger, for Pilz has pointed out that 32 per cent. of cases of ligation of common carotid exhibit brain symptoms, and that 56 per cent. of these cases die. Another danger is nerve injury to such important structures as the vagus, sympathetic, hypoglossal, facial, recurrent laryngeal, and in this case to the superior laryngeal. Those tumours should not be removed as long as they remain small; it is only when, by their rapid growth, a fatal issue is inevitable that operation is called for. Surgeons must be wide awake to the existence of such growths and so avoid being led into operating upon what might appear a trivial condition.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND
W. F. HAMILTON.

"The Causation and Treatment of Headaches." *Practitioner*, July, 1906.

This subject is treated in a series of papers which will repay careful perusal.

Dr. Campbell points out in an introductory paper the impossibility of always relying on the position and character of a headache as a guide to its cause. This is especially the case in headaches which are general, and even local pain should be regarded as suggestive and not conclusive evidence of the cause, for the pain of a cerebellar tumour may be sometimes chiefly frontal, whilst that of a frontal growth is sometimes referred to the occiput.

In the investigation of headache, disease of the nervous system, the cardiac-vascular and renal systems should be first excluded. After the eyes have been examined and the sinuses thought of there is a class of cases included under the toxæmias, anæmias and reflex irritations.

between which it is often difficult to discriminate with accuracy. Headaches attributed to reflex causes are not easy to understand. Recent papers by Dr. William Russell strongly uphold the existence of reflex arterial spasm, as a cause of headache, and although the question of vaso-motor innervation of the cerebral arteries still remains a matter of doubt, clinical experience is in favour of a capacity of active contraction of these vessels.

Other headaches, which may be included in the reflex group, arise from the continued contraction of the occipito-frontalis muscle consequent to a strong sensory stimulus. In this manner headaches following exposure to a strong wind, and some of those associated with toothache and other pains, may be accounted for.

Dr. Saundby writes on headaches of renal origin. It is in the later stages of chronic contracting kidney that they are severe and present characteristic features. The typical renal headache is occipital and the site of pain is of some significance. Their symptoms require treatment by light non-nitrogenous diet, purging and vapour baths. Spontaneous hæmorrhage is occasionally followed by improvement, and this has suggested the value of bleeding. The relief obtained by this measure is very transient, the headache recurring in a few days. Phenacetin and coffein rarely fail to give temporary relief. Trinitrin may relieve, but is uncertain, whilst erytholuitrite is more apt to cause than relieve pain.

Intracranial disease as a cause of headache is treated by Dr. James Taylor.

This headache is nearly always *paroxysmal* in character. Although dull aching may be almost constantly present, yet severe, even agonizing paroxysms arise at different times and with varying frequency. Its paroxysmal character probably depends to a large extent on variations in blood pressure, and this is probably the reason why the taking of food, and especially the administration of alcohol, are so frequently followed by headache in gross intra-cranial disease. Nausea and vomiting is another characteristic common to the headache produced by different kinds of intracranial disease, and, although often said to occur independently of food, yet the taking of food is frequently the exciting cause of both nausea and vomiting. Faintness may also be present in cases of intracranial headaches. It is sometimes induced by nausea, or if independent of this, is probably to be referred to pressure on the cardiac or respiratory centres.

In meningitis headache is usually characterized by its constancy as a dull, aching discomfort, varied by severe paroxysms of agonizing pain, often accompanied by sickness. The pain is more severe in the earlier

stages, being masked later by delirium and unconsciousness. In the meningitis of ear disease the headache is often frontal, but in this and other forms of meningitis there is often tenderness over the area corresponding to the inflamed meninges.

An attack of hemiplegia is occasionally associated with severe headache. In this condition the hemiplegia is usually due to hæmorrhage. Thrombosis, even when due to syphilitic endarteritis, is seldom accompanied by headache, but with an accompanying syphilitic meningitis headache may be severe and persistent, both before and after the hemiplegic seizure. Headache in cases of hæmorrhage is usually general, and there may be superficial tenderness of the scalp.

Headache is the most constant symptom of intracranial growth, but it may be absent in cases of slowly growing tumour. When associated with optic neuritis it is almost pathognomonic. The site of pain is, unfortunately, of little value in localizing the lesion. Head believes that deep tenderness and local pain in addition to the general headache indicate localized meningeal irritation. If the pain is occipital and if there is head retraction there is great likelihood of a cerebellar or basal tumour.

The headache of hemiplegia is often much relieved by the use of leeches. Bromide and antipyrin in combination are useful. Nitroglycerine does good in some cases by lowering blood pressure.

In meningitis the ice bag is often a source of great relief, while drugs are mostly inefficacious. In intracranial tumours antipyrin, phenacetin with caffeine, aspirin, etc., often give great relief. Morphine is occasionally required in all these intracranial conditions. If it is used, it should be with a full knowledge of its danger—the danger of so reducing the vitality of the already hampered respiratory centre as to possibly induce a fatal result. The operation of triphining and opening the dura mater gives relief in many cases, although it sometimes fails. It may be desirable to carry out this measure even where the position or nature of the tumour is of such a character as to render it immovable.

Migraine and toxæmic headaches are referred to at some length by Dr. Wilfred Harris. Migraine in its various forms is fully described. It is closely allied to other paroxysmal neuroses, especially epilepsy, asthma and vaso motor angina. Indeed, a typical migraine with hemianopia and scintillating scotoma may certainly be looked upon as a sensory epilepsy with a discharging focus in the neighbourhood of the occipital lobe. Epilepsy may be associated with migraine, either in the same person or in near relatives. Bromide treatment as in epilepsy may give marked relief.

Migraine is often associated with a throbbing temporal and occipital artery of the affected side. Pressure on these vessels or the application of an ice bag may bring immediate relief, facts which render it probable that a vaso-motor disturbance is an essential feature of the morbid process. Initial pallor of the face is a familiar symptom, and later throbbing as the headache develops, and it seems rational to believe that a similar process is present in the cortex. If this view is correct, the immediate relief following a profuse epistaxis or compression of the carotid artery is at once explained. Other methods of obtaining relief depend on withdrawing the blood to other parts of the body, as by immersion in a hot bath and applying ice to the head. Sipping hot fluids produces engorgement of the viscera and lessens the pressure in the cerebral vessels. The frequency of the attack in women at the commencement of the period probably depends on heightened blood pressure known to occur at that time.

It is a matter of general knowledge that morphine hypodermically is the only drug which will arrest an attack at the height of the paroxysm. This is due to the fact that digestion and absorption are arrested, and indeed, drugs may be vomited unchanged at the end of an attack. The old fashioned seton induces a slight pyrexia and often relieves the frequency and severity of the paroxysms.

A full dose of phenacetin and caffeine as soon as the aura appears, with rest for a couple of hours may serve to ward off an attack. For menstrual headache butyl-chloral hydrate in 10 grain doses, with phenazone 5 grs. and Tr. Gelsemium m.x. for two days previous to the period, and continued for its first two days is serviceable. In some cases other coal tar preparations act better and may be tried. For the attack itself massage of the forehead and head with high frequency electricity in the form of faint sparks to the scalp may lessen the pain. In spite of the tendency of static electricity to raise blood pressure, the negative breeze from a powerful machine often effects immediate and lasting relief.

Eye strain and nasal disorders are the subjects of special papers by Drs. Jessep and Lock.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The following officers have been elected for the Session 1906-07:—President, Dr. F. G. Finley; vice-president, Dr. Wesley Mills; treasurer, Dr. Alfred T. Bazin; secretary, Dr. A. H. Gordon; trustees, Dr. James Bell, Dr. H. S. Birkett, Dr. James M. Jack.

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THE YEAR'S WORK—ADDRESS OF THE PRESIDENT
OF THE MONTREAL MEDICO-CHIRURGICAL
SOCIETY, OCTOBER 5TH, 1906.

BY

F. R. ENGLAND, M.D.

It has been customary for the retiring president, at the first meeting of the Session, to give a brief review of the work done by the Society during his term of office, a duty which on this occasion devolves upon me.

The book of registration shows the present membership of the Society to be:—Resident members, 169; non-resident members, 7; temporary members, 43. During the Session of 1905-06, extending from Oct. 6th to June 15th, twelve resident members joined the Society, and one resigned. Eighteen regular meetings were held with an average attendance of 56, which is, I believe, the largest attendance in the history of the Society. There were presented by our members fifteen papers, twenty-three case reports, twenty-four living cases, nineteen pathological and four anatomical specimens and four pieces of new apparatus. Two lantern demonstrations were given.

At the beginning of the Session the programme committee issued a provisional programme, announcing the dates of the meetings and the titles of the papers to be read during the Session. This was found to be of great assistance, and added much to the interest of the meetings; for by this means the subjects of the papers were carefully selected with the view of covering as wide a field of medicine and surgery as possible.

I shall not comment upon any one paper in particular; it is sufficient to remark that as a whole they were characterized by superior excellence,

and showed careful and thoughtful preparation. I think it is not too much to say that, if the papers alone represented the entire work of last Session, the Society would have added its quota to our knowledge of medicine and surgery.

Of the other material presented, in the form of case reports, living cases, anatomical and pathological specimens, there was so much that was of great interest that any attempt at enumeration would be tedious. Perhaps, however, I may be allowed to recall to your memory a few of the rarer conditions reported: a rather singular case of osteoma, where a tumour the size of a small walnut swung loosely in the mouth, attached by a pedicle to the base of the tongue, multiple and numerous echinococci cysts of the omentum and peritoneum; hysterical swelling of the hand; automobile fracture.

Among the living cases exhibited were a series of four healed cases of rupture of the eye ball; a case of hereditary syphilis with enlargement of the liver, and a remittent fever simulating typhoid; ulceration of the cornea from the diplo-bacillus of Morax-Axenfeld; a series of tuberculous cases showing the result of treatment by subcutaneous injections of iodoform; splenectomy for large wandering spleen (so-called ague cake), with a most satisfactory result; lymphatic and myelogenous leukæmia; cholelithiasis with fat embolism; extirpation of a chronically inflamed lacrymal sac performed as a prophylactic measure against disease of the cornea. Among the pathological specimens were the following: red infarcts of the liver; obliterating inflammation of the hepatic veins; cerebellar tumours; papilloma of the bladder; sarcomatous glandular tumour of the kidney from a young child; also, a very interesting microscopical slide of the spirachæte pallida obtained from the primary or Hunterian sore.

In addition to the contributions of our own members, several distinguished visitors honoured us with addresses which added not a little to the interest and success of the Session's work.

Dr. John L. Todd, a comparatively recent graduate of McGill, and now of the Liverpool School of Tropical Medicine, gave a most enjoyable and instructive illustrated lecture. With the aid of numerous lantern views, he was enabled to present a very good idea of life and conditions on the Congo, as well as a vivid clinical picture of the more marked features of sleeping sickness in the various stages of this fatal disease.

Dr. Royal Whitman read a valuable paper on the weak or so-called flat foot, dealing with the subject in a thoroughly scientific manner. After considering at some length the foot as a mechanism governed by mechan-

ical laws, he pointed out that the principles of successful treatment lay, not necessarily in supporting the weak or fallen arch of the foot by the Whitman or any other special form of plate, but rather in the direction of correcting faulty attitudes and faulty mechanism and thereby restoring normal function.

At the last meeting of the session we were fortunate in having present Baron Takaki, Medical Director of the Japanese Navy, who gave a most interesting address on the subject of Beri-Beri; his description of the disease, his views regarding its etiology and treatment, and his ultimate success in banishing the terrible scourge from the army and navy, was a fascinating story, told in a quaint manner and with pleasing directness and simplicity. The almost phenomenal results obtained by the medical service of the Japanese Army and Navy during the Russo-Japanese war, lent added interest to the Baron's address.

Through the kind invitation of the Medical Staff of the Royal Victoria Hospital, the Society had the pleasure of attending a special meeting at that institution. An extensive programme had been prepared and was ably carried out. An interesting series of living cases drawn from the general and special clinics was shown, and the pathological display formed a notable exhibition. Such a meeting cannot fail to have an especial attraction for the general practitioner who has but few opportunities of coming in contact with the work of a large hospital. Our members were also invited to attend the inaugural meeting of the Royal Sanitary Institute which was held in these rooms on February 14th, 1906, at which His Excellency the Governor General presided. It was a representative gathering and a number of important papers were presented.

We have to record with deep regret the loss which this Society has sustained by the death of Dr. Frank Buller who for many years was one of its most active members. In him we had the highest type of the physician; he was a candid enquirer after truth, and every subject which engaged his attention was approached with a directness and practicality characteristic of his strong personality. He knew the art as well as the science of medicine, and did much to advance them both, as he did to promote that happy cordiality and friendship which has so long existed among the members of our profession in this city. His portrait, and also one of the late Dr. F. W. Campbell, have recently been presented to the Society, and now adorn our walls.

Two years ago the retiring president, in his address, urged the importance of establishing a library upon a satisfactory basis, and also said,

in referring to the question of publishing the transactions of the *Socin extenso*, that it was almost a reproach to us that this work, so well begun years ago, should have been allowed to lapse owing to lack of interest on the part of our members. These questions I would once more bring before you for your thoughtful consideration. I regret that our rooms, which are open daily from 2 to 9 p.m., for which we are paying a heavy rental, are not more largely patronized by the members. A number of good journals—and many more might be added if they were used—are always to be found on the table, and two good microscopes have recently been purchased, which are kept at your disposal. The Medico-Chirurgical Society is the one representative body which is open for membership to the entire medical profession. One of its chief aims has always been to enlist the sympathy and co-operation of all. Here the university teacher, the hospital clinician, the laboratory worker and the general practitioner may meet upon neutral ground; and in a broad and friendly spirit engage in the consideration of any question of common interest. Dr. Osler, speaking in these rooms two years ago, when referring to the years he had spent in this city, said that he looked back with greater pleasure to the meetings of the Medico-Chirurgical Society than to anything else; that he had always been able to pick up at the meetings a good deal in the way of knowledge, but what was perhaps of far greater importance, he had learned many priceless lessons of humility and charity; he had always fraternized with his colleagues and endeavoured “to turn the woolly side out.” Such friendly intercourse must certainly be an important safeguard against the rule of the few; and if it does not confer complete immunity from, it is at least good prophylactic treatment against petty cliques and factions, which flourish in certain localities. From these evils we in this city have on the whole been remarkably free.

In conclusion, I wish to express my sincere appreciation of the great honour conferred upon me in electing me president of this Society. I would also acknowledge with gratitude, the kind and ready assistance which has been given at all times by the officers and members in general. To our Secretary, Dr. Gordon, I am particularly grateful, feeling, as I do, that the success of our meetings has been in a large measure due to his zealous and unfiring efforts. Let us all endeavour to make it a matter of duty which we owe to ourselves as well as to the medical profession, to take a personal interest in the affairs of the Society, and to extend to our newly elected president and officers our generous and active support.

TWO CASES OF TUBAL PREGNANCY.

BY

A. LAPHORN SMITH, M.D., M.R.C.S., Eng.

Surgeon-in-Chief to the Samaritan Hospital for Women, Gynæcologist to the Western Hospital and to The Montreal Dispensary.

It is a strange coincidence which has been remarked by many operators that one may pass a year without meeting with a case of tubal pregnancy, and then have two or three in as many months. This was the writer's experience, more than once; and now it has happened again. Case 34 was operated on in May. It was reported at the meeting of the Medico-Chirurgical Society on the 29th of May, and published in the MONTREAL MEDICAL JOURNAL in the July number; then Cases 35 and 36, which are now reported, were operated on in July and September of this year.

Case 35. Mrs. B., 24 years of age, came to the Samaritan Hospital in the ambulance on 6th of July, 1906. She was a delicate woman, married at eighteen, and had had four children, the last one two years ago. She had enjoyed fairly good health until a few weeks before admission, when she was obliged to take to bed on account of a severe pain in the left side. She believed she was pregnant about two months, but felt differently as compared with her sensations at other pregnancies. After a few days in bed she began to be so weak that she became alarmed, and sent for her family physician, Dr. Sylvestre who was formerly my assistant, and helped me with operations for tubal pregnancy.

Dr. Sylvestre had already diagnosed nine cases, five of which he had sent to the writer, and another having occurred during the writer's absence from the city he had sent to other operators. So, when Dr. Sylvestre was called to a woman who thought herself pregnant, who had a pain in her left side, and had blanched lips, and a pulse of 120 to 140, he came to the conclusion that she was having an internal hæmorrhage. On examination of the pelvis he found the uterus of the proper size for that state of pregnancy, but he also found a boggy mass on the left side which was exceedingly tender.

He insisted upon an immediate consultation, which was held at 11 a.m. on the 6th of July. His diagnosis was confirmed; for the look of the woman, and the condition of the pulse added to the peculiar boggy feeling of the mass in Douglas cul-de-sac, left little room for doubt, and her removal in the ambulance to the hospital was strongly advised. It took all of his time, however, during the rest of the day until 8 p.m. to overcome the difficulties which were thrown

in the way of her removal to the hospital; but at last she arrived at 9 p.m., when she was taken at once to the operating room and hastily prepared, as by this time her pulse was over 140. On opening the abdomen a good deal of bright red blood gushed out, but further loss of blood was at once arrested by clamps on the ovarian and uterine arteries. The source of the hæmorrhage was found to be a tear on the left tube near the uterus. The tube and ovary which were matted together were removed *en masse*, as it would have been difficult to separate them, but the right ovary and tube were not even examined owing to the patient's urgent condition. About half a gallon of clots and blood was scooped out with the hands; and then, although about a quart still remained, it was thought best to lose no more time in getting her off the table. Half a gallon of salt solution was poured in, and the abdomen was just about to be closed when, in pulling down the omentum, this little fœtus was found near the liver. (Fœtus was exhibited).

The urine was drawn just before the operation and when it was examined, an hour or two later, it was found to be loaded with albumen.

The pulse came down to 130 next morning, and 100 the day after, and her temperature which had been at 97 before the operation rose to normal. Then the woman had to run another gauntlet of a miscarriage of the pregnancy in the uterus, during which a considerable quantity of blood was lost, and necessitated a great many salt solution enemas which were kept up during a whole week. We were obliged to raise the foot of the bed on account of the anæmia, which was not very good for drainage, but fortunately there were no septic symptoms. She had an anxious convalescence, but during the next few weeks we had to contend with a distention which seriously interfered with her heart for which we gave, though in vain, an average of ten grains of quinine a day. All kinds of stimulating enemas were tried but without avail, and it gradually went down under 30 to 40 grains of asafoetida a day. Almost no morphia was used, but she received a 1/30 of strychnine three times a day for three weeks. A curious thing about the distention was that she remained distended even when her bowels were moving four or five times a day. She went home in four weeks and is now being treated by Dr. Sylvestre for the kidney condition, principally by milk diet.

An interesting question in connexion with this case is this: Does Dr. Sylvestre have more cases of tubal pregnancy in his practice than his neighbours who never diagnose any, or have those of his neighbours who have an equally large practice had nine cases which they failed to recognize? The writer knows of at least two cases of tubal

pregnancy which were saved by operation, and had been so diagnosed. He believes that the condition is more frequent than is generally supposed, and he hopes that by reporting these cases, as they occur from time to time, his brethren in general practice will come to recognize them more early and more often.

Case 36. Mrs. S., came into the writer's clinic at the Montreal Dispensary on Thursday, 20th September, 1906, for the first time. She had had a pain in her side for several weeks, and, meeting a friend on the street who was coming to the Dispensary, she came along with her. She objected to the routine examination which every new case has to undergo there, but when after examination she was told that she had a tubal pregnancy, and that she would have to enter the hospital that night and be operated within a day or two she was quite dazed. She was given an admission slip to the Western Hospital, and fortunately the house surgeon on duty made room for her, for, while going up to the bed, the tube ruptured and she had her first hæmorrhage.

As she felt somewhat better on Friday, and as the writer was engaged at another hospital for that day, she was held over till Saturday, when the abdomen was opened in the presence of several members of the staff. On reaching the peritoneum the diagnosis was confirmed, for the dark blood could be seen through it. It was quickly opened, several handfuls of clots were removed, and then this specimen of the distended tube (specimen was shown), about the size of a pear was tied off and removed.

The diagnosis at the Dispensary rested entirely on the pelvic examination; a painful mass in the left side in a woman who believed herself two months pregnant, but whose uterus was empty. Rupture had not taken place at that time, for the mass was as clearly defined as a pus tube, and there was an absence of that boggy feeling in Douglas cul-de-sac which we always feel when the hæmorrhage has been going on for a few days. This patient has made a rapid recovery, her pulse and temperature did not require any morphine; she had no vomiting, and no distention. Her case is a telling argument in favour of early operation, if possible before rupture.

In Case 35 the other tube and ovary were left because there was no time to even look at them owing to the patient's desperate condition. In Case 36 the other ovary was examined and found to be cystic; the cysts were opened and some excised, but the ovary and the tube were left, in deference to the almost irresistible, but, as I believe, mistaken current, of professional opinion which passes under the name of conservatism.

BRITISH MEDICAL ASSOCIATION.

*Seventy-Fourth Annual Meeting, Held at Toronto, August 21st, 22nd,
23rd, 24th, and 25th, 1906.*

SECTION OF ANATOMY.

THE TEACHING OF ANATOMY IN UNIVERSITIES AND MEDICAL SCHOOLS.

BY

ARTHUR ROBINSON, M.D., President.

In our Section this year we have a wealth of important material to be considered. This being the case, it would obviously be unwise that your President should encroach unnecessarily upon time already too short. Still, within the limits wisely imposed by our authorities, and without entrenching too much upon the time set apart for our more direct work, this appears to me to be the proper time to draw your attention, as workers in the field of human anatomy, to a point of importance, which we may not neglect if we desire to keep human anatomy in its proper place as a living science, whilst at the same time we are careful not to lose sight of its practical importance as a technical subject in a medical curriculum.

Human anatomy appears to have been studied at first by men of an inquisitive turn of mind, who desired to know as much as possible of themselves and their fellows. They were men of the educated class of their time, and it is not improbable that they may have hoped that a knowledge of the structure and arrangements of the various parts of the body would be of service in an attempt to meet and avoid those infirmities and diseases which they knew as the precursors and possible causes of death, just as similar knowledge enabled them to preserve and improve other mechanisms with which they were acquainted. Whether this was so or not, the knowledge gradually acquired was utilized by those who undertook the treatment of injuries and diseases of the human frame, and gradually the study of the details of human anatomy passed at first into the hands of the priesthood, who provided for the bodies as well as the souls of their flocks, and afterwards into the hands of the members of the medical profession. This was the natural course of events, for it is clear that the man who desires to regulate, protect, improve, and repair any instrument must know thoroughly all its main features and as many of its minute details as

In the following pages we have gathered together abstracts of the addresses of the Presidents of the various Sections at the meeting of the British Medical Association in Toronto. They are drawn from the official reports in the Journal of the Association. [Editors.]

possible. The treatment of the body having fallen into the hands of a special group of men, it naturally followed that they must teach the details of their profession, and, consequently, human anatomy, which is a basis subject, has been taught for the most part in medical schools which may or may not have been associated with universities, and it has been taught almost entirely by medical men.

Under these circumstances, there has been danger that the science might be shorn of its wider limits and reduced to a technical level, the human body being looked upon merely as an object possessing certain definite structure and arrangements of parts which must be studied by the physician and surgeon merely for the purpose of localizing and treating diseases and injuries.

In more than one place the science has been debased to this level, and there is still a tendency in some quarters to decry any wider view and to insist that the medical student shall be taught only the technical details of human anatomy—that is, the positions of organs and parts and their relations to each other. This view is tending to become more prominent in association with the increasing demands which are being made upon the medical student's time from many sides, and it is usually pressed by those who are of the opinion that most of that time should be spent in seeing cases and watching or taking part in their treatment. Nothing could be more harmful, nothing could be more fatal to the best interests of the medical profession and the public than the general adoption of such a view. It would result in the medical man becoming technician—that is, a man whose value is limited by the number of cases he has seen and treated. The medical man thus taught would be very much in the position of the working mechanic who can do well everything he has been taught to do or has seen done, but it is absolutely useless when he is desired to do something new which requires general as well as special knowledge.

Fortunately, there have always been in the medical profession many broad-minded men who have recognized that the man who has a wide knowledge of general principles is better adapted to meet unexpected circumstances than one who is merely provided with a memory of a certain number of observed facts, and luckily the opinions of our broader-minded colleagues have hitherto prevailed. The result has been so far as anatomy is concerned, that in a large number of well-equipped medical schools and medical departments of universities the teaching of anatomy has passed into the hands of specialists—that is, into the hands of men who have spent the greater part of their lives in the study of the subject and who are enthusiasts in its teaching and study, looking

upon man as the highest outcome of Nature and considering him and his relations, therefore, as worthy of the most careful study.

There are clear signs that this will be still more the case in the future. We recognize that it must be so; nevertheless, though we see that the movement is in the right direction, we must not minimize the danger which lies in the path and which will be inimical to the best interests of medical students if it is not carefully guarded against. The danger is that specialists occasionally lose sight of the practical applications of their subject and work at and teach only its more scientifically interesting features. It is a danger which exists in the cases of all subjects taught by specialists and it is one that must be carefully avoided in the case of anatomy, for the majority of the students of anatomy are, and so far as we can see always will be, medical students, who in most cases take up the subject merely as the means to an end. The danger will be avoided if the electing bodies of teaching institutions will take care to appoint as teachers only men who have been through the medical curriculum and who understand the needs of the profession and its students, and if the men thus appointed will keep in touch with their colleagues, who are practising the art of medicine and surgery. They can do that in many ways, of which one of the not least important is taking part in the meetings of medical associations, and thus keeping touch with the general knowledge of the profession and its relationships to their own special branch, and on that account it is important that there should always be an Anatomical Section at the annual meeting of the British Medical Association.

It should, however, be remembered that the object of a medical curriculum is not to turn out a finished anatomist any more than a finished physician or surgeon, for that is an impossibility in the time through which the curriculum extends. The object should be to give the men passing through the curriculum a wide knowledge of the principles on which they must rely in the practice of their profession, a sufficient knowledge of the details to prevent them making any serious mistake when they first begin to depend upon themselves, and a sufficiency of general knowledge to enable them to take their places as members of a community who are able to appreciate the interests of their fellows, and, what is not least important, an understanding of man's place in Nature and his relationship to Nature's general laws. The amount of detailed knowledge which it is possible to acquire within the period of a medical curriculum is not sufficient to enable a practitioner of medicine to cope successfully with all the various conditions he will meet in his practice, but if he has been thoroughly grounded in general principles,

and in the universal laws which govern animal life, and if he possesses a moderately fair amount of brain power, he will not only be able to deal satisfactorily with all the cases he meets, but he will also be capable of recording observations in a proper manner; he will also be able to balance evidence, to guard against fallacies, and he will probably do something to advance the general knowledge.

It should, therefore, be the object of anatomists to avoid entangling medical students in a superfluity of detail. They should insist upon a thoroughly sound knowledge of the general relations and arrangements of the more important organs and parts of the body, a good knowledge of the general principles which underlie the relationships and arrangements and the advantages derived from them. They should endeavour to make their students acquainted with the general laws of growth and development and with abnormal conditions so far as they are produced by deviations from general laws of growth and development, and carrying on the work done in the Biological Department, they should draw attention to man's relations to other animals in all cases where such relations are evident, and are instructive of the methods by which man has been evolved and the means by which he retains his place in the world. In addition, however, they must see that their students acquire a sufficient knowledge of the detail of the various parts of the body and their relationships to enable them to deal successfully with any emergency of daily life; but, with this exception, it is more important that the students should know the general principles upon which the various systems and organs are constructed, and those on which they are modified, than that they should memorize details which they can look up at any time, whenever necessary, in the numerous good text books which are now at every one's disposal. It is not necessary to enter here into details of those which should be passed lightly over, for we can all easily recall examination questions which show both the right and the wrong trend of thought, but I would strongly urge that if we wish to do well for our medical students and the medical profession as a whole we should deal more with general principles and less with detail than has generally been the case in the past.

LARYNGOLOGY AND OTOTOLOGY.

J. DUNDAS GRANT, M.D., Edin., F.R.C.S., Eng., President.

Our programme, though fairly comprehensive, has, as it happens, a comparatively small proportion of it devoted to otology proper. It is too late to rectify this, and though I am personally to some extent re-

sponsible for it. I feel that it is to be regretted. I will content myself with expressing the hope that the dazzling brilliancy of the results of our modern surgical otology may not be allowed to divert our gaze from the minute details of intra-aural technique. The former are answerable for the saving of many lives from danger, but the latter enable us often to prevent our patients from running into those dangers. The aurist who as Professor Lucae has said, can cure the largest number of cases without recourse to major operations is the one most deserving of credit. When danger is present or threatening there is no stronger advocate for operative interference than myself.

I am happy to say that our programme includes a paper by Dr. Bacon, of New York, on the question as to how far it is advisable to adopt conservative methods in the treatment of aural diseases, and one by Dr. Clarence Blake on the value of blood-clot as a primary dressing in mastoid operations, both of which are certain to be both suggestive and informing. In the Museum also you will be interested to see a stereoscopic view of a human labyrinth prepared by Dr. Albert Gray, of Glasgow, showing a calcareous patch in the vestibule, while in the Section of Anatomy Dr. Shambaugh will describe the development of the stria vascularis and the circulation in the labyrinth of the pig in continuation of the work with which he is so thoroughly identified. We can only hope that others of our Anglo-Saxon confreres will be encouraged to investigate the internal ear.

Let us remember that the ear is primarily an organ of hearing, and cultivate the accuracy and patience in examination and dexterity and delicacy of manipulation upon which our success in relieving our patients and, may I say, in making our own reputation so much depends.

Another rule which we may apply to our present meetings is to concentrate our attention on what is best in whatever our confrere is imparting rather than in trying to find arguments against what he advances. We may thus lose the opportunity of making dialectical "hits" and of scoring for the moment rhetorical "points," the fallacy of which is subsequently realized, but too late for the mischief to be undone.

By trying to understand and assimilate what is best in papers and speeches I have read or listened to, I have acquired an amount of useful working knowledge of our subject which my limited powers of original insight would never have enabled me to attain. May I suggest this receptive frame of mind as the most profitable one in which to start? At the same time it is quite necessary to be on the alert for the detection of fallacy, whether unintentional—for we are liable to err—or intentional, because it is human to wish to gain one's point. With

your help I shall make it my proud duty to try and keep our discussion clear of both.

OBSTETRICS AND GYNÆCOLOGY.

THE RELATION OF GYNÆCOLOGY TO THE WORK OF THE GENERAL PRACTITIONER.

BY

A. H. FREELAND BARBOUR, M.D., President.

Gynæcology holds out one hand to the general practitioner and the other to the specialist. She has her grand manner, in which, adopting the style and tools of the surgeon, she rivals him in brilliance of work; yet I am not sure but she is greater when, in the guise of the family physician, she cares for the health of the mothers and growing daughters of the community. She is equally at home with the brilliant operator and the sagacious practitioner; and when honours go round, will the greater fall to the operator in his theatre furnished with every appliance and waiting for his patient, or to the practitioner in his gig starting on a long drive across the moor?

Gynæcology as a speciality is sufficiently in evidence in the programme of work in this Section, and therefore I devote the few minutes of this introductory address to the relation of gynæcology to the work of the general practitioner.

The medical student starts with a wrong idea of gynæcology, for which the term "diseases peculiar to women" is in part responsible. Instead of applying the general principles of pathology to pelvic diseases, he thinks that these have a special pathology. He fails to recognize that apart from the peculiarities of the anatomical structures involved, and the physiological changes implied in menstruation, there is no difference between salpingitis and appendicitis, or that epithelioma of the cervix does not differ from epithelioma of the lip. The difficulties which beset clinical teaching in gynæcology send him into practice inadequately prepared to deal as efficiently with diseases of the reproductive system as with those of other systems in the female: and this insufficient equipment develops in the mind of the laity the idea that a special knowledge is required to deal with disease in this part of the body, a special knowledge as distinct from the experience which comes to a man as the result of having devoted his attention to one branch of medicine.

Now, from one point of view, there is no more reason to treat gynæcology as a speciality than obstetrics, which is admitted to be part

of the work of the general practitioner. A moment's consideration will show that the great majority of gynæcological cases must be at first in the hands of the general practitioner. A married woman expects to be treated in the first instance by the physician who attended her at her confinement, and it is for him to say when she should pass beyond his care. The examination of her case is at first in his hands, the diagnosis of her condition rests with him, and the routine treatment of chronic cases, of what we might describe as minor gynæcology, should be relegated to him.

The recent remarkable development in operative gynæcology has led to the idea that the surgical aspect of gynæcology is gynæcology itself. But this is only one side of it; it has what I might call its medical aspect also.

The term "specialty" applied to gynæcology raises the question as to what we mean by specialty. Gynæcology is not a specialty in the same sense as mental disease, or even diseases of the eye. When a case of mental disease presents itself the practitioner at once recognizes that there is a case which does not belong to him. And the same is largely true of diseases of the eye. Specialism in gynæcology, apart from major gynæcological operations, is more akin to specialism in diseases of the heart or lung, in which, by devoting special attention to affections of one system, and gaining a wider experience in it than falls to the general practitioner, the physician has come to be recognized as an authority on diseases of a given system.

From this point of view it may be said that the way to the specialist in gynæcology passes through the domain of the general practitioner, and that the specialist is to be called in when the general practitioner recognizes that he has not the training or experience to enable him to diagnose or to treat successfully his patients. This view of the subject requires a higher standard of knowledge than he at present possesses, and we stand at the parting of the ways. Is gynæcology to be relegated to the post-graduate course, to be studied only by those who have a bias towards it? Or is it to be made an integral part of the student's training, so that at its termination he will know at least the elements of clinical gynæcology. Of clinical as distinct from systematic, which implies that every student must be taught clinically, and, when possible, examined clinically. I know the difficulties which the latter proposal implies, but from the relation of the diseases of women to obstetrical work, from the reasonable expectation of the general public, from the very nature of the case, this seems to me to be the road along which we must advance at this parting of the ways.

While emphasis has been laid on the teaching of gynæcology to the student as against its postponement to a post-graduate course, a word is necessary as to the manner of presenting it. While taught as a specialty it should be taught in relation to medicine, surgery, and midwifery, the tripod on which the practice of medicine rests. If these three subjects were represented by three circles, side by side, gynæcology is a fourth intersecting the three. The defect in medical education at present is that each subject is taught as it is in itself instead of in its relation to the other subjects of the curriculum. If the teacher in each subject kept before him the relation of his subject to all the others the student would not be in a hurry, as he is at present, to escape from an overburdened curriculum into general practice. He would begin to be interested in knowledge as an end in itself. At present the utilitarian, which passes readily into the mercantile, bulks too largely in his mind. Aristotle makes the important distinction between what is useful or yields revenue and what is liberal or tends to enjoyment. The study of medicine, if taken in the proper way, might become a liberal education while not ceasing to be a professional one. But I have wandered from my text. My object was to suggest to those who have to do with the teaching of this subject a method of presenting it.

There is another aspect of the same question which I would venture to lay before my colleagues who are engaged in the practice of gynæcology, and that is the necessity of taking a broad view of a case. Specialism is a peak in a mountain range and its development is subject to the same law. A broad foundation must be laid for knowledge, remembering that the height of a hill is related to the breadth of its base. Some rise, like Fujiyama, abruptly from the plain, volcanic in nature, produced by a sudden outburst of imprisoned force. Such are the geniuses of the medical profession. More usually, however, a peak is produced by a gradual process—for nature is rarely in a hurry—which leads to its appearance as a member of a mountain chain. The specialist is slowly differentiated from his fellows like a peak in the Rocky Mountains.

OPHTHALMOLOGY.

R. MARCUS GUNN, F.R.C.S., President.

Before proceeding to our regular business, it is fitting that we should remind ourselves and think for a moment of the great loss that Canadian ophthalmology has sustained, since the last annual meeting of this Association, in the death of Professor Buller of Montreal. Trained at

Moorfields, he held office as house-surgeon there for a considerable time, and some of my earliest recollections of the hospital are associated with this period. Buller left there a record of good work well done. His position and his work in Montreal are known to us all, and his striking personality was familiar to most here. It seems but yesterday since he, in collaboration with Dr. Casey Wood, of Chicago, brought to our notice the effects of poisoning by wood-alcohol in a memoir that is already classical. But, apparently in full vigour, he was claimed by an insidious disease which found no remedy, and, as we bitterly remember to-day, Professor Buller is no longer with us.

We welcome most heartily all our visitors, and certainly not least our esteemed colleagues and professional brethren from the United States of America. We are glad that so many have been able to join us here, and in your name I invite them most cordially to consider themselves for the time being members of our meetings, with all privileges, and under the same rules of procedure as ourselves.

PHYSIOLOGY.

PROFESSOR W. D. HALLIBURTON, M.D., F.R.S., President.

In the subject I have selected for my communication I appear before you as a delegate from a Joint Committee of the Physiological and Chemical Societies of England appointed to consider the question of proteid nomenclature, of which I was appointed chairman. The report drawn up by this Committee has been already received and criticized by the two Societies concerned, but it has been felt before its recommendations are likely to meet with acceptance that some expressions of opinion should be obtained from other nationalities. It is specially desirable that uniformity in terminology should be adopted by the English-speaking nations, and if our friends in France and Germany can also see their way to fall into line so much the better.

It is one's earnest hope that by such means the present confusion, which is so great a stumbling block to writers, teachers, and especially to students, may be removed. I fear, however, that past attempts to secure uniformity of nomenclature have not been attended with very great success. Some years ago the Chemical Society in London appointed a Committee to formulate nomenclature, but their recommendations have never been universally adopted by those who write and speak English. They suggested definite meanings, for instance, to certain terminations; for example, *ol* is the affix selected for alcohols, *ine* for basic substances, *in* for materials of more indefinite structure.

Yet we still see leucine and choline spelt without the final *e*, and gelatin with it. In America, where we should have anticipated some amount of support, the old non-conforming conscience has asserted itself, and the tendency there has been in the direction of Germanizing rather than Anglicizing chemical names; creatine is spelt kreatin, sulphur appears as sulfur, and the final *e* in chloride, sulphate, and other salts is usually absent. There is no harm in the phonetic replacement of *ph* by *f*, or of the hard *c* by *k*, but the words chlorid, bromid, and bromat strike the conservative Englishman as being neither euphonious or rational.

But to return from this digression to the particular case of the albuminous compounds. A great change is coming over our chemical conceptions of these substances, and when Emil Fischer's important work upon them is concluded a further revision of nomenclature will no doubt be necessary. The Committee I have referred to were quite aware of this, and recognize that what they now suggest can be only temporary; still, even as a temporary measure, some uniformity is advisable, and certainly the time is not yet ripe for coining strictly chemical names. When that time arrives one can hardly doubt that many of the old familiar terms will still remain, just as many of us still continue to use such names as corrosive sublimate, oil of vitriol, and lunar caustic.

The object of the Committee's recommendations has been as far as possible to retain existing terms, and to reconcile the way in which they are employed in Great Britain, America, and the Continent of Europe. An initial difficulty met the Committee in the selection of the general name for the whole group. The term "proteid," used for it in England, is restricted to a subgroup (the conjugated proteids) by the Germans. The word "albuminoid," still employed by analytical chemists in England, and also by French physiologists in the same sense, is in Germany and also by English physiologists restricted to the heterogeneous group, of which gelatin and keratin are instances. The word "albumin" is fairly universally bestowed on a subgroup; its adoption as a family name would make the present confusion worse, and there is no adequate English translation of the homely German term "Eiweissstoff."

After much debate the word "protein" was recommended as the general name. It is at present so used in America and to some extent in Germany (*Proteinstoffe*). This word has the advantage of admitting of the derived words, "protease," "proteose," etc., and it has, after all, the ring of familiarity. We have therefore suggested the abolition of the term "proteid."

The subclasses, beginning with the simplest, would be as follows: 1. Protamines. 2. Histones. 3. Albumins. 4. Globulins. 5. Sclero-proteins. 6. Phospho-proteins. 7. Conjugated proteins. (a) Gluco-proteins (for example, mucin). (b) Nucleo-proteins. (c) Chromo-proteins (for example, hæmoglobin).

For classes 3 and 4 (albumins and globulins) a general term would be advisable, especially from the teachers' point of view. We have not been fortunate enough to find one which would prove acceptable. The expression "heat-coagulable proteins" which was suggested has two disadvantages: First, it is too long; and secondly, it is inaccurate, for other proteins—for example, histones and some nucleo-proteins—are also coagulable by heat.

For Class 7 we still retain the double-barrelled expression "Conjugated protein," mainly because we were not sufficiently lucky to hit upon a single descriptive word. The term implies that here we have to deal with substances in which the protein molecule is united to a prosthetic group. We have ruled out of this class the vitellin-caseinogen group and put them in a separate compartment labelled "Phospho-proteins (Class 6); the prefix "nucleo-" frequently used in relation to these substances is incorrect and misleading.

The new word "sclero-proteid" replaces the word "albuminoid" (gelatin, keratin, etc). as employed by English and German physiologists. The prefix indicates the skeletal origin and often insoluble nature of its members.

Coming next to products of protein hydrolysis (a term preferable to proteolysis), the Committee recommend that these be classified as follows:—1. Infra-proteins. 2. Proteoses. 3. Peptones. 4. Polypeptides. Infra-protein replaces *albuminate* (acid-albumin, alkali-albumin). The termination *ate* implies a salt and so is objectionable. These first degradation products are obtainable from both albumins and globulins, and after much consideration the Committee recommend the prefixing of "infra" (or possibly "meta" which some prefer) to the word "protein" as an indication of comparatively slight chemical alteration.

The term "protease" includes albumose, globulose, gelatose, etc. The subdivision of these into proto-, hetero-, deuteroproteoses, etc., and the various modifications of Kuhne's original classification were considered by the Committee, but they have wisely determined that at present the whole matter is in too unsettled a state for any final nomenclature to be proposed.

The household word "peptone" is not likely ever to disappear from chemical literature. We, however, propose that it should be restricted

to those further products of hydrolysis which cannot be salted out from solution, but which nevertheless still give the biuret reaction.

In the course of the discussion on this subject we were confronted with the discovery that there are certain vegetable proteins which have hitherto been regarded as peptones which do not give the biuret reaction. It seems impossible at present to bring exceptional substances of this kind into any general classification, and the same is true for those curious vegetable proteins, such as gliadin, which are soluble in alcohol.

The polypeptides are still further on the down-grade, though most of those we are acquainted with are the synthetical products of amino-acids which Fischer has prepared. They do not as a rule give the biuret reaction, but their exact relation to the peptones is still undetermined.

In conclusion, the Committee considered a few special cases of terminology. They had, for instance, some difficulty in assigning to fibrin its proper place in their classification, but ultimately put it among the derivatives of globulins, for its mother substance, fibrinogen, is a member of that group.

They had no difficulty about caseinogen and casein, and strongly urge the continued use of these words in the sense now employed in the majority of English textbooks, that is, caseinogen for the principal protein of milk, and casein for its coagulated condition brought about by the rennet ferment.

In the case of the muscle proteins they are equally unanimous that the original terms, of which I am the unhappy parent, should be adhered to. The new words introduced by v. Furth have only produced confusion, especially among students. The terms to be adopted should therefore be "paramyosinogen" and "myosinogen" for the proteins of the muscle-plasma, "soluble myosin" for v. Furth's soluble myogen-fibrin, and "myosin" for the final product.

I am quite aware that it will not be easy in a meeting like this to adequately discuss the numerous points raised; the present occasion must be regarded rather as a preliminary feeler on the question, and we propose to submit the matter to various societies of physiologists among others to the American Physiological Society, for careful consideration and report.

SURGERY.

SIR HECTOR C. CAMERON, M.D., Glas., President.

I congratulate myself, and still more I congratulate you that, by request of the Executive of the Association, the Presidents of the various

Sections will abstain from delivering any formal addresses in opening, this morning, the business of their respective Sections. I recognize fully the wisdom of this decision and most willingly bow to its requirement. But I feel that I should ill requite the kind favour which has placed me in the honourable position I occupy, and should do but scant justice to my own feelings, were I not now, in a single sentence, to say to you how very greatly indeed I appreciate the distinction thus conferred upon me.

We who practise our profession in Great Britain and Ireland are never forgetful of the great and daily increasing debt which surgery owes to those who cultivate its science and art on this side of the Atlantic; and we therefore naturally look forward with keen anticipation to the benefits which cannot fail to accrue to all of us from the instructive and valuable intercourse which we shall have here with our Canadian brethren, as well as with those American surgeons who will do us the honour of attending our meetings.

You will perhaps here permit me to offer to the latter a most hearty and fraternal welcome. We trust they will take a full share in all our discussions, giving us the benefits of their experience and of those opinions which they are so well qualified to express on the various important and interesting subjects which are to be brought before us. These subjects constitute, I think, a promising programme, provided and arranged for us by the zeal and industry of our secretaries.

With their continued assistance, as well as with the countenance and help of the vice-presidents of the section, I hope to be able so to guide and regulate the business that our meetings may prove—what I am sure they can hardly fail to prove—a source of the highest interest and value to all of us.

THERAPEUTICS.

BY

DONALD MACALISTER, M.A., M.D., D.C.L., LL.D., F.R.C.P., President.

An Imperial Pharmacopoeia.

By order of the Council of the Association, "Presidents of Sections are requested not to deliver a formal address in opening their Sections, as complaints have been made of want of time for sectional work." I obey the order with alacrity. But I am allowed a few "introductory remarks," provided they are brief and informal.

First, then, let me express the pleasure which we who come from the Old Country feel in meeting once more on Canadian soil. We remem-

ber the impulse to corporate expansion, the realization of our Imperial responsibilities as a profession, that came to us when the Association, met at Montreal. The force of that impulse is still felt among us. It was good, it *is* good, for us to be here; not only that we may meet face to face with those of our kinsmen beyond the seas whose names are associated in our minds with good work ably done for the advancement of our common science, but also that we may be braced by breathing your larger air, and by coming into closer touch with your strenuous vitality. We therefore count on returning to our tasks at home heartened by the knitting of new and of old friendships, and strengthened by the transfusion of fresh vigour, of new thoughts and influences, from you who are here engaged in fashioning a sister nation. We have come to learn rather than to teach, and thus it has been the endeavour of my colleagues and myself to procure for our Section as many contributions as possible from this side of the Atlantic, and from both shores of the great lakes. We trust that you will find us teachable. That we have journeyed so far in search of knowledge is at least an indication that we are not yet incurably affected with insular sclerosis, not yet wholly refractory to the new ideas and unfamiliar experiences which you are ready to communicate.

In the second place, I would seize the occasion to say a word on behalf of the *British Pharmacopoeia*. As Chairman of the Committee that is charged with the preparation of our national medicine-book, it is not inappropriate that I should seek to interest this Therapeutic Section, and particularly the Canadian members of it, in our work for the profession. The time for the next revision is approaching, and we desire to make the new book a better expression of our ideal than has hitherto been practicable. Forty years ago the Medical Council declared that in the *Pharmacopoeia* it desired to "afford to the members of the medical profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined." In 1898, with the help of the medical and pharmaceutical authorities throughout the British dominions, the first effective steps were taken to produce a work adapted to the general and the local requirements of all parts of the Empire. Our efforts were materially aided by a Canadian Committee, under the leadership of Dr. Blackader, one of your vice-presidents. In the *Indian and Colonial Addendum*, of 1900, a further step was taken to meet the needs of particular localities outside the United Kingdom. Medicinal plants and other substances which had been suggested for in-

clusion by colonial authorities, but which were little known and little used at home, were therein dealt with, and official sanction was given to their local employment. At the instance of the North American Colonies such additions to the *materia medica* as couch-grass, arnica, cotton-root bark, grindelia, black haw, wintergreen, sesame oil, and turpeth were introduced, and suitable preparations containing them were described. But it was added that "with regard to the sources, preparations, and properties of some of these drugs, further investigation, especially in the countries in which they are found, is much to be desired." And a hope was expressed that their official recognition would conduce to research of this kind.

Since that date the new United States *Pharmacopoeia* has been issued (1905). The British Committee has observed with gratification that it exhibits a marked tendency to uniformity with the *British Pharmacopoeia*, and that it includes just such information about some of the "North American" drugs of the *Addendum* as was desired. It also embodies the conclusions reached by the International Congress on Pharmacopoeial Unification, which with Professor H. C. Wood I was privileged to attend as the Government delegate at Brussels in 1903. These conclusions have now been ratified by an international agreement between the various pharmacopoeial authorities of the civilized world, and have already been observed in framing the new Pharmacopoeias of Austria, Holland, Belgium, Spain, and the United States. I need not say that they will also be embodied in the next *British Pharmacopoeia*. They refer solely to the unification of the strengths of drastic or poisonous drugs and preparations. They seek to secure that throughout the world medicines which bear the same name, and whose potency demands that they shall be used with cautious precision, shall mean the same thing, and shall possess the same determinate strength.

Though we are still far from realizing the dream of a single International Pharmacopoeia, applicable to the whole world of medicine, the results of the Brussels Congress go far to minimize the dangers to the public which in these days of travel attend the lack of agreement between the various national standards. When they have been carefully carried into effect, a traveller whose prescription contains "dilute hydrocyanic acid" will no longer receive it of 1 per cent. in France, $2\frac{1}{2}$ per cent. in Belgium, and 10 per cent. in Spain. At present "syrup of chloral" may contain from 2 to 10 per cent., and "tincture of cantharides" from 5 to 20 per cent. of the active ingredient, according to the country where they are dispensed.

Differences of tradition and environment will long preclude the complete harmonization of the numerous national pharmacopœias; but no such differences stand in the way of adapting the *British Pharmacopœia* to the needs of all the nations and peoples that are included within the world-wide dominion of Greater Britain. To bring about that adaptation is the aim of the General Medical Council, and we seek the willing and sympathetic co-operation of our brethren beyond the seas that we may attain it. Through the India Office and the Colonial Office at home, I have sent a circular letter to each of the seventy Administrations of the Empire, inviting the considered suggestions of their respective medical and pharmaceutical authorities towards the improvement of the *Pharmacopœia* from this imperial point of view. In particular, advice is sought as to the permanent inclusion of the drugs dealt with in a tentative manner in the *Addendum* of 1900. From over thirty Colonial governments answers to my circular have already been received, and these contain much useful information for our guidance. But, so far as I am aware, no answer has yet been sent from this great Dominion. Did modesty allow, I should be glad to think that you are silent merely because you are perfectly satisfied with the book as it is, and have no desire to alter it in any way. I am privately assured that that, at least, is not the reason.

May I therefore take advantage of my temporary position to say that without Canadian co-operation we must fall short of our ideal? The new *Pharmacopœia* will be condemned to antenatal mutilation. Might not a representative Committee be formed under the auspices of this and other medical associations of the Dominion for the purpose of formulating your special requirements, and of affording us the advantage of your special knowledge and skill? The committee at home will welcome your suggestions, and will give them its most careful consideration. In Canada you have experience in the use not only of the *British Pharmacopœia* and its *Addendum*, but also of the United States *Pharmacopœia*, and the French *Codex*. You can point out to us what discrepancies between these have proved to be of serious importance in practice, and how they may best be reconciled. You can tell us what non-official drugs are in widespread use among you, and therefore call for recognition in order that their characters and preparations may be exactly defined. You can inform as what articles in the *Pharmacopœia* are practically obsolete in this country, in order that we may have proper data for deciding as to their omission. Forms of adulteration or contamination with which we are unfamiliar at home may be within your experience; these we should know about when we are revising our stan-

dards and tests of purity. Questions of this kind, and others which will emerge on systematic inquiry are scarcely to be compassed by the home Committee without Canadian assistance. I am sanguine that, after this hint, the assistance will not be withheld.

Before we proceed to the business of the day, allow me a few words on a kindred subject. The co-operation between the Dominion and the United Kingdom, which I have suggested need not be limited to the preparation of an Imperial Pharmacopoeia. Some of us would fain see it extended to the whole field of medical study and practice. You may be aware that by our Medical Act of 1886, a person who holds a recognized Colonial medical diploma granted to him in a British possession, who is of good character, and who is legally entitled to practise in that British possession, is also entitled, without examination in the United Kingdom, to be registered in the *Medical Register*. But before a Colonial diploma can be thus "recognized," the Privy Council must be satisfied that the British possession in question affords to home-registered practitioners such privileges of practising there as to His Majesty may seem just. And by an Act of 1905 it is further provided that for this purpose a Province or State in a larger Federation shall be deemed a distinct possession, and therefore entitled to apply for recognition on its own account. Orders in Council have already been issued, applying the Act to New Zealand, the States of Australia, the Provinces of India, Ceylon and Malta, all of which grant medical diplomas of their own. And as these diplomas have been recognized by the General Medical Council, their holders are at once made capable of registration in the British *Register*, and of acquiring all the rights and privileges which registration confers. A similar enactment exists in relation to foreign countries, and already the Kingdom of Italy and the Empire of Japan have been admitted to corresponding privileges. But, with one exception, the provinces of Canada have not yet applied for admission, and to that extent the medical federation of His Majesty's dominions is incomplete. The exception is Nova Scotia, to which the Medical Act was extended by an Order in Council on May 11th in the present year. The Medical Council learned with great satisfaction of the step thus taken by the Maritime Province, and it looks forward with interest to like applications from the other great Provinces of the Dominion. I am aware that on your Statute Book there stands a Medical Act of 1902, which, were it in operation, would go far to complete the confederation of the provinces by providing for their common action in medical matters, and by assimilating and extending their professional privileges. And I am also to some extent aware of the internal difficulties that have

hitherto prevented the Act from coming into effect. But these internal difficulties need not affect the question of imperial recognition and reciprocity. Under our recent legislation each Province can negotiate for itself with the home authorities, as Nova Scotia has done. It need not wait for the others. His Majesty in Council is the arbiter as to the justice of its claim to be included in the medical federation of the Empire, and to be granted the wider citizenship which that implies.

As things stand, however willing the powers at home may be, a medical graduate of Ontario or Quebec cannot legally hold a medical appointment in the naval or military service of the King. He cannot be appointed surgeon to a British ship, or to any hospital or other public establishment, body, or institution in the United Kingdom. He is ineligible as a medical officer of health; he cannot so much as be a candidate for one of our diplomas in hygiene or State medicine. And lastly, he may not use his degree as a qualification for private practice in the United Kingdom or in any of the British possessions—and they are not few—that are governed by our Medical Acts. These disabilities must often be irksome, and the more because, so far as Canadians are concerned, they are now self-imposed. The imperial Parliament at least has opened the way for their removal. The next and only remaining step has to be taken by the provincial authorities.

Every year Canadian graduates come over to study and to obtain diplomas at home. When I observe your splendidly-equipped medical schools and hospitals, I cannot help wishing that a strong reverse current might be set up, and that our own students and graduates might acquire the habit of crossing the Atlantic to complete or to supplement their medical education in Canada. That mutual recognition of professional qualifications would further and foster this tendency I am convinced; and I am not less sure that such educational interchanges would exert a powerful influence for good, not only upon us but upon you. Sympathy comes from mutual understanding: there is nothing so divisive as mutual ignorance.

I close, therefore, on the note with which I began. We value these occasional meetings outside our islands because they lead to our better knowledge of each other, and so strengthen the bonds of brotherhood which unite us. But the meetings are too rare to accomplish all that is desirable in this kind, and many of us are middle-aged and more before we take advantage of them. If we could but have more intercourse, and have it younger, our mutual sympathies and affections would be warmer still. It is for this reason that I have risked your impatience by wandering a little from the proper subject-matter of our Section. Let us now return to Therapeutics.

PRESENT STATUS OF ANTI-TUBERCULOSIS WORK IN CANADA.

BY

J. H. ELLIOTT, M.B.,

Physician-in-Charge, Muskoka Cottage Sanatorium, Gravenhurst, Ontario.

The second meeting of the British Medical Association in Canada seems a most appropriate time to present a report of what is being done in the Dominion to combat tuberculosis, for it was in 1897, when the Association first met in Canada, that Dr. Barnes, the retiring President of the Association, Dr. Roddick, the President-elect, with others, journeyed to our northern highlands to assist in the opening of the Muskoka Cottage Sanatorium, which had been built by the National Sanitarium Association.

This Association was the pioneer in organized effort to check consumption in Canada, and this was the first sanatorium in Canada.

In the nine years which followed much has been done by this and other organizations, while private individuals, municipalities, and the Governments of the various provinces are showing increased interest in the tuberculosis problem, and have given material assistance in the campaign.

In this paper I wish to review the various agencies at work and to show as far as possible what has been accomplished.

My data have been secured from the secretaries of the various provincial Boards of Health, from the medical health officers of the towns and cities with population of over 5,000, and from the secretaries of the various Associations, while much has been written from personal knowledge.

There are now ten associations in Canada, with forty local branches, for the prevention and treatment of tuberculosis. Two of these are national in their scope, and have a number of active branches. Two provincial associations have been formed, and a number of local associations have been and are being organized throughout the Dominion.

The following list is as complete as I have been able to collect:

National.

National Sanitarium Association of Canada. Organized 1896. Thirty-two branch associations. Their Excellencies Earl and Lady Grey, Patrons; Lord Stratheona and Mount Royal, President; W. J.

Read before the British Medical Association in Toronto, and reprinted from the official Journal.

Gage, Esq., Chairman of Executive Committee; J. S. Robertson, Secretary, *Saturday Night* Building, Toronto, Ontario.

The Canadian Association for the Prevention of Consumption and other forms of Tuberculosis, Nine Branches. Organized 1901. His Excellency Earl Grey, Honorary President; Senator Edwards, President; J. M. Courtney, Esq., C.M.G., Honorary Treasurer; Rev. Wm. Moore, D.D., Secretary, Organizer and Lecturer, 102 Bank Street,

Provincial.

British Columbia Anti-tuberculosis Association; has numerous local branches. C. J. Fagan, M.D., Secretary, Victoria, B.C.

The New Brunswick Association for the Prevention and Cure of Consumption. Dr. Wm. Bayard, St. John, N.B.

Local.

Montreal League for the Prevention of Tuberculosis. President, Sir Geo. A. Drummond; Secretary, Dr. E. S. Harding.

Quebec League for the Prevention of Tuberculosis. Rev. Canon Scott, St. Matthew's Rectory, Quebec.

The District of St. Francis League for the Prevention of Tuberculosis. Secretary-Treasurer, Dr. E. J. Williams, Sherbrooke, Quebec.

Toronto Free Hospital for Consumptives. W. J. Gage, Chairman; J. S. Robertson, Saturday Night Building, Toronto, Secretary.

Hamilton Health Association.

Local Branches of the Canadian Association for the Prevention of Tuberculosis at Charlottetown and Summerside, P.E.I., Colchester Co., N.S., Sherbrooke and Montreal, Quebec, Ottawa, Toronto and Hamilton, Ontario.

Thirty-two local Branches of the National Sanitarium Association (see below.)

NATIONAL SANITARIUM ASSOCIATION OF CANADA.

In 1896, when one of the founders of this Association wrote to the Toronto City Council offering to give \$25,000 to build a home for consumptives, if the city would provide a site, a reply was sent suggesting that the money be devoted to building a wing to the Home for Incurables, so prevalent was the idea that consumption was incurable. When the Association was formed, its first efforts were directed to the establishment of a sanitarium in the delightful Muskoka region. To-day it has two sanitoriums there, one for paying patients, one for the poor. These institutions represent a capital outlay of \$140,000 and provide beds for

160 patients. Over 2,000 patients have received treatment, the maintenance expenditure amounting to \$400,000. Some of these patients have been maintained free of all cost for periods of six to twelve months,

The Association is endeavouring to do its share in checking the spread of this scourge through Canada. All contributions received are devoted to educational work and the maintenance of needy patients in the Muskoka Free Hospital for Consumptives. To further its work, thirty-two branch associations have already been formed in the following towns and cities. Their gravity is shown in the fact that one-half are contributing funds to maintain one or more beds in the Muskoka Free Hospital.

BRANCHES OF THE NATIONAL SANITARIUM ASSOCIATION.

The following is a list of places where branch associations of the National Sanitarium Association have been established, the figures in brackets indicating such associations as have raised the requisite amount of \$300 a year to endow a bed:

Acton, Brantford (1), Brussels, Belleville (1), Cobourg, Campbell-ford, Exeter, Guelph (2), Georgetown, Goderich, Hamilton (12)*, Hanover, Ingersoll (1), Kincardine, Lindsay (1), London, Orangeville, Oshawa (1), Ottawa (16)† Picton, Port Hope, Peterborough (1), St. Mary's, Sarnia (1) St. Thomas (1), St. Catherine's, Tilsonburg, Walkerville (1), Wingham (1), Woodstock (1), Montreal (2), Stratford.

The following is a list of municipalities that have contributed the required \$300 a year to endow a bed in the Muskoka Free Hospital for Consumptives for a period of twelve months. Allowing four months as the average attendance, this gives accommodation for three patients from these municipalities each year:

Brant Co., Brantford City, Chatham, Niagara Falls, Perth Co., Lambton Co., St. Thomas, Lincoln Co., City of St. Catharine's, Oxford Co.

One hundred and two other municipalities have contributed amounts from \$5 to \$100 during the past year.

*A pavilion of twelve beds has been set aside for Hamilton and Wentworth County for the past two years, maintained during that period by the Hamilton Branch Association.

†Ottawa has contributed \$4,300, which has been accepted by the Association to set aside two wards for eight patients each in the Muskoka Free Hospital for Consumptives. Ottawa not only has furnished this amount for the purpose named, but provides for the maintenance of all patients sent under agreement with the Association.

Last year there were admitted to the Muskoka Free Hospital for Consumptives, on order of the municipality, from:—City of Toronto, 37 patients; City of Hamilton, 21 patients; City of Ottawa, 10 patients.

Under statute enactment any municipality may make an agreement with the Association whereby the institutions of the Association shall treat its patients and the municipality may pass by-laws or issue debentures to raise money to assist this Association in its work.

To further its educational campaign the Association has arranged with the National Association for the Study and Prevention of Tuberculosis (U.S.A.) that the exhibition which was so successfully organized and held in New York last winter under its auspices, and which has since been held in a number of the principal cities of the States, should be transferred to Toronto, and this is now occupying the new Science Building of Toronto University.

Since this Association was organized the death-rate from tuberculosis in Ontario has fallen from 16 per 10,000 to 12 per 10,000. We cannot but think that this is in part due to the educational side of the work done.

CANADIAN ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

The Canadian Association for the Prevention of Consumption and other forms of Tuberculosis was organized in March, 1901, at the instance and under the patronage of the Earl of Minto, then Governor-General. The objects of the Association are fully set forth in the constitution then adopted.

Lectures have been delivered in all of the chief towns and centres, in Prince Edward Island, Nova Scotia and New Brunswick; in Sherbrooke and the country round about, in the Province of Quebec; throughout the Ottawa Valley, on both sides of the river, in towns and cities on the St. Lawrence River; in North and South Grey, St. Mary's, London, Ingersoll, Woodstock, and several other places, including Sault Ste. Marie, in Ontario.

About 2½ millions pages, bearing directly on the cause and prevention of consumption have been distributed. There are at present nine active branches; Charlottetown and Summerside, in Prince Edward Island; Colchester County, with head quarters in Truro, Nova Scotia; Sherbrooke and Montreal in Province of Quebec; Ottawa, Toronto, and Hamilton in Ontario, and the Association for the Prevention and Treatment of Consumption in British Columbia, with head quarters in Victoria.

In several smaller places, where there does not seem to be room for active organization, committees are at work distributing literature and placing leaflets wherever they seem likely to be useful.

At the last annual meeting of the Association several large committees were appointed to deal with the following:

(a) Organization and work: to consider the best methods and lines for future development.

(b) How can we obviate the prejudice against the erection of hospitals and homes for consumptives, which are frequently regarded as sources of danger to the surrounding community?

(c) Care of public conveyances (steamships, railway carriages, street cars, etc.) to prevent the spread of consumption.

(d) Inspection of schools and examination of children.

(e) House to house visitation, instruction to sufferers, and early diagnosis.

As a sample of the reports of these committees, that of No. 4 is appended.

REPORT OF COMMITTEE NO. 4 ON MEDICAL INSPECTION OF SCHOOLS AND EXAMINATION OF CHILDREN.

Having regard to the most essential steps for the prevention of tuberculosis, your Committee begs leave to report:

1. That the proper sanitation of schools and the protection of the health of the children are among the matters of fore-most importance worthy the urgent attention of the various education departments of the Dominion.

2. That only members of the medical profession have the preparation and the experience adequate to fully judge and accurately appreciate the sanitary condition of the schools, and that reliable observations as to the influence of the school and its exercises on the health of the young can be made only by school physicians.

3. That the inspection of schools is a State duty, and that the medical inspection of schools is a legitimate and all-important part of school inspection, and that, therefore, it is a grave responsibility of the education departments of Canada to take measures to protect the health of pupils in schools.

4. That it is specially advisable among other things.

(a) That school physicians be appointed to supervise the sanitary conditions of school buildings and their appointments, examine into the health of teachers and pupils and advise them as to all hygienic measures necessary.

(b) That steps be taken to remove present insanitary conditions from schools in which they exist.

(c) That rules and instructions be issued as guides to teachers and pupils aiming at the avoidance of practices and habits contrary to the spread of the disease, or the deterioration of physical vigour.

(d) That in order to prepare teachers to effectively co-operate with the school physician, they should be thoroughly instructed in the training schools in the principles of hygiene, physical development, and a knowledge of the dangers that commonly threaten the vigorous development of the young.

(e) That as the avoidance of alcoholic beverages is a strong factor in the prevention of tuberculosis, the attention of pupils should be systematically called to this fact.

(f) That a special medical examination be made on their (pupils) first entry into school, noting age, weight, height, constitution, state of nutrition, etc., and any significant physical and mental conditions; that it is desirable that at the first medical examination the mother be present to give information as to previous illness or predisposition, and to receive instructions as to the care of the pupil at home; that reports be made at regular intervals and copies sent to parents.

(Signed) R. L. H. COWLEY,
Convenor.

BRITISH COLUMBIA ANTI-TUBERCULOSIS ASSOCIATION.

This Association is endeavouring to collect \$100,000 to establish a sanatorium for the province. Local branches have been formed throughout the province to further this object. Several city councils have promised yearly grants toward such a sanatorium, and the Provincial Government is prepared to assist.

MONTREAL LEAGUE.

The Montreal League for the Prevention of Tuberculosis was organized in the year 1903. It is carrying on an excellent campaign of instruction and relief. Much literature has been distributed, not only to patients and their families, but in schools, factories, and other institutions. Lectures have been held on the subject in more than thirty Protestant churches, and nearly all the Roman Catholic parishes of the city, as well as in several schools, working men's clubs, etc. Through the efforts of the Legislation Committee of the League a by-law has been passed prohibiting spitting on the side-walks.

All cases of tuberculosis reported to the League by physicians, from hospitals or otherwise, are visited more or less frequently as occasion

requires by a qualified inspector, who distributes leaflets of advice, gives verbal instructions, supplies sanitary cuspidores, endeavours to provide better ventilation, and disinfects habitations after or removal.

In the autumn of 1904 the League opened a dispensary especially for persons suffering from pulmonary tuberculosis, where physicians attend for some hours daily for consultation, and patients may be examined and receive advice and medicines. This branch of the work has grown steadily, is much appreciated, and promises satisfactory results. When thought advisable, patients are provided with nourishing food—eggs, milk, etc.—also warm clothing. For those who require nursing at home, the co-operation of the Victorian Order of Nurses is enlisted. Cases in an advanced stage of the disease who have no friends in the city are sent to an institution. The great need in this branch of the work is a sanatorium in a healthy situation for incipient cases. The work is supported by subscriptions from the public, aided by a municipal grant.

In the three years of its existence the League has dealt with about 700 cases of tuberculosis, some of whom have received continuous care and assistance for many months.

DISTRICT OF ST. FRANCIS LEAGUE.

The District of St. Francis League for the Prevention of Tuberculosis, organized in 1903, is carrying on a campaign of education. Local societies or subcommittees are formed in each town or municipality of the district about Sherbrooke. The League arranges for examination of all sputum submitted and looks after all indigent patients.

HAMILTON HEALTH ASSOCIATION.

This Association has established this year the Mountain Sanatorium at Hamilton, for the care of patients from the city and from Wentworth County who are in the earlier stages of pulmonary tuberculosis. Far advanced cases are not to be admitted. Temporary buildings are at present in use. The Association has 100 acres of land, with funds of \$35,000 to carry out its work. About 20 beds are already provided. There being no provision for far advanced cases, the Association maintains a visiting nurse to care for such cases in their homes, keeping in touch also with the local Board of Health.

TORONTO FREE HOSPITAL FOR CONSUMPTIVES.

This Association has been formed in Toronto to make provision for all patients with far advanced disease. It first provided beds only for the far advanced poor of the City of Toronto, but such has been the

success of the undertaking that kind friends have made it possible for this Association to enlarge its scope, and it soon hopes to be able to accept the far advanced cases not only of Toronto, but to provide a number of beds for patients from elsewhere in Ontario. The hospital of this association is situated at Weston, Ont., overlooking the Humber Valley. It is the first institution in Canada to care for those advanced in consumption. With a capital expenditure of \$50,000, beds for over 60 patients have been provided. In its first year 136 were cared for.

Provincial Measures.

BRITISH COLUMBIA.

(Reported by Dr. C. J. Fagan, Secretary of the Provincial Board of Health.)

Notification laws have been adopted and are reasonably well carried out, as is also the antispitting by-law.

Local societies are formed all over the province, the objects of which are:

(a) To collect funds for the maintenance of a consumptive sanatorium.

(b) To look after the interests of local consumptives.

(c) To establish a course of lectures on consumption in public schools.

(d) To ask for a municipal grant from local authorities towards the maintenance fund.

(e) To ask clergymen to devote one Sunday sermon each year to health matters, the collection to go towards the maintaining of the sanatorium.

Cases of pulmonary tuberculosis are not admitted to the wards of public hospitals, but it is advocated that special provision be made for the handling of advanced cases by hospitals.

The Vancouver General Hospital has provided a special building for the handling of advanced cases, and it is hoped that other public institutions will do likewise.

At present there is no special hospital for the treatment of incipient consumptives, but I may state that a considerable sum of money has already been collected for building purposes, and most of the British Columbia towns have organized societies with the object of maintaining our sanatorium. Already a considerable sum is subscribed and promised, and I am satisfied from indications that we can depend on receiving a sufficient sum for maintaining an institution for our own tuberculous patients.

Disinfection after tuberculosis is attended to as it is after any other contagious or infectious disease.

All milk dealers must produce a certificate signed by the Provincial veterinary surgeon that the herd from which their supply is derived is free of tuberculosis.

ALBERTA.

(Reported by Dr. A. E. Clendenan, Provincial Health Officer.)

This province, being inaugurated September 1st, 1905, has not yet a Public Health Act such as is in operation in the older provinces, nor is there a provincial laboratory. Physicians and druggists are asked to report all cases known to them. Owing to the large number of consumptives coming to Alberta, many of whom are indigent, an effort will be made at the next session of the Legislature to enact that every case that enters must report his condition to the Government, and be prepared to either pay all expenses for maintenance or come provided for by the Governments of the other provinces of the Dominion Government.

It is hoped that in the new Public Health Act tuberculosis will be put as nearly on the same footing as other contagious diseases as is practicable, each case being reported in such a way that every affected person will be under the direct supervision of the Government, and be provided with literature and given such other attention as is necessary to eradicate the disease from the province.

An effort is on foot to organize a very considerable number of anti-tuberculosis associations, such as exist to a limited extent in eastern Canada.

Approximately there are 200 cases of tuberculosis amongst the Indians of the province reported by the Dominion Indian Reserve doctors to the Dominion Government. Since these cases are entirely under the control of the Department of the Interior, the ordinary means of combating tuberculosis are difficult of operation. The Indians and whites, however, mix but little.

MANITOBA.

The Provincial Board of Health, with the physicians of the province, are endeavouring to secure legislation for the erection of a provincial sanatorium.

The Provincial Laboratory examines all sputum submitted.

PROVINCE OF ONTARIO.

The Province of Ontario has enacted special legislation to assist in the erection of sanatoriums, providing one-fifth of the cost (up to

\$20,000) of a sanatorium erected by any municipality or recognized association. Three sanatoriums have received the help to date.

In addition to assisting in the initial cost, the Government grant assistance to the extent of \$1.50 per week per patient for all public ward patients, in lieu of the ordinary hospital grant, which is about 15c. per day.

At the last session of the Legislature \$15,000 was voted the Muskoka Free Hospital for Consumptives to assist in its work.

The Provincial Laboratory examines all sputum free of charge.

QUEBEC.

(Reported by Dr. Elzéar Pelletier, Secretary of the Provincial Board of Health.)

In January, 1895, the Legislature set apart 400 acres in Trembling Mountain Park for sanatorium purposes, but nothing has been done to supplement this.

In June, 1905, 137 acres were granted for sanatorium purposes on Lake Edward, 1,200 feet above sea level. Towards construction of the proposed sanatorium the Rev. Canon Scott reports \$22,000 promised, conditional on \$40,000 being raised.

Legislative enactments:

1. The Health Act enacts that open tuberculosis is to be notified to municipal authorities.

2. The by-laws made by our Board (under the authority of the same Health Act) renders disinfection obligatory after the death of a tuberculosis patient.

3. The by-laws made by our Board respecting factories provide for lighting, cubic space, aëration and ventilation, evacuation of dust, etc.

4. Tracts and *Sanitary Bulletin* are distributed gratis.

The Provincial Board of Health has transmitted to the Government, for sanction, additional by-laws, which when duly sanctioned will:

- (a) Make disinfection obligatory after the removal of a tuberculosis patient (as well as already done after his death).

- (b) Forbid spitting in streets, roads, public places, buildings, and conveyances.

- (c) Provide for confiscation of meat from tuberculous animals, about on the lines suggested by the Royal Commission on Tuberculosis.

- (d) In regard to habitations: Provide for (1) a minimum cubic space, (2) natural lighting, (3) prohibition of the use of cellars for day or night occupation, (4) minimum cubic space in night refuge, (5) open spaces around dwellings, (6) damp courses in certain cases.

(e) In regard to hospitals, homes, asylums, prisons, provide for cubic space and ventilation.

(f) In regard to dairies, provide, among other things, for (1) the notification of tuberculous cases, (2) the isolation of suspected tuberculous cows until a veterinary surgeon has verified to the udder not being involved; the certificate to be renewed at least every three months and to be put aside whenever bacterial examination would show the existence of the bacillus in the milk.

(g) In regard to educational institutions, provide for cubic space, ventilation, natural lighting, prohibition of dry sweepings.

NEW BRUNSWICK.

The New Brunswick Medical Society and representative business men have met the Government urging the establishment of a provincial sanatorium. The Provincial Board of Health have made similar recommendation. The Government have as yet taken no definite action.

NOVA SCOTIA.

Nova Scotia has been the first and, so far, the only province in Canada to provide a provincial sanatorium for its patients. This is situated at Kentville, in the Annapolis Valley. Initial cost, \$20,000; annual grant, \$9,000; 20 beds. The province does not intend to provide beds for all, but has undertaken this work rather for its great educational value. The Provincial Laboratory examines sputum free of charge.

PRINCE EDWARD ISLAND.

No Board of Health regulations *re* tuberculosis.

MUNICIPAL AND LOCAL MEASURES.

Letters of inquiry were sent to sixty-two towns and cities with population of 5,000 and over, as recorded at the census of 1901, submitting the following questions:

1. Have you any special hospital or sanatorium for the treatment of cases of pulmonary tuberculosis?

2. Are cases of pulmonary tuberculosis admitted to the wards of all or any of your hospitals?

3. Have any special wards been provided for the care of these cases?

4. Have you a special dispensary for the treatment of tuberculosis? If so, kindly outline its organization.

5. Have you any local organization for the care of tuberculous patients in their homes?

6. Have you an antispitting by-law?
- 6A. Are notices posted without by-law?
7. Have you compulsory or voluntary notification of phthisis?
8. Does your Board of Health disinfect after tuberculosis, as after scarlet fever and other infectious diseases?
9. Other measures.

SPECIAL HOSPITALS OR SANATORIUMS.

No municipality, as far as I can learn, has built a sanatorium or hospital for the care of its tuberculous patients. Local philanthropic organizations have made provision in some places, while some municipalities send their patients to existing sanatoriums.

Vancouver has a special building for tuberculous cases at its general hospital.

ADMISSION OF PATIENTS AT GENERAL HOSPITALS.

Six towns and cities have no hesitation in accepting tuberculous cases into their hospitals; 7 admit, but insist on patients being isolated, 1 or 2 using isolation wards; 4 admit only incipient cases. Other than Vancouver, no hospital has constructed special wards. In some, tents are used.

Three cities have tuberculosis dispensaries; 5 cities have organizations for the care of the poor in their homes.

British Columbia has a provincial antispitting by-law. Of the 31 towns outside this province which have reported, 15 have antispitting by-laws, while 4 others have notices posted; in some, little attention is paid except by the street car companies.

Notification of cases is requested by the Provincial Board of Health in British Columbia; in other provinces, 6 have compulsory notification and 5 voluntary; 20 disinfect after death or removal of patient, or during course of illness if patient has been careless, where reported or requested.

LIST OF SANATORIUMS IN CANADA.

Ontario.—Muskoka Cottage Sanatorium, Gravenhurst; 85 beds. \$12 and \$15 weekly. For incipient cases. Dr. J. H. Elliott, Physician-in-Charge.

Muskoka Free Hospital for Consumptives, Gravenhurst; 50 to 70 beds. Free, or patient pays in part if able. For incipient cases. Dr. C. D. Parfitt, Physician-in-Charge.

The Mountain Sanatorium, Hamilton; 20 beds. Dr. A. D. Unsworth, Physician-in-Charge.

Toronto Free Hospital for Consumptives, Weston; 60 beds. For advanced and far advanced cases. Free, or patient pays in part if able. Dr. W. J. Dobbie, Physician-in-Charge.

Galt has provided a Swiss cottage for care of advanced cases.

Stratford has two tents for advanced cases.

Quebec.—Lahl Ghur, Ste. Agathe des Monts, for incipient cases; 21 beds, \$14 weekly. Dr. Howard D. Kemp, Physician-in-Charge.

Camp of Montreal League for Prevention of Tuberculosis for Poor of Montreal.

Nova Scotia.—Provincial Sanatorium, Kentville; 20 beds for residents of province. Patients pay \$5.00 weekly. Dr. W. S. Woodworth.

Wolfville Highlands Sanatorium; 10 beds. Private. Dr. G. E. DeWitt, Wolfville.

Alberta.—Calgary Sanatorium, Calgary; 16 beds. Private.

SEASIDE TREATMENT OF SURGICAL TUBERCULOSIS.

In Europe and the United States much attention is just now being drawn to the beneficial effect of the seashore on tuberculous children, and many seaside hospitals for children are being established. For many years the Victoria Hospital for Sick Children in Toronto has during the summer months transferred all cases of surgical tuberculosis to the Lakeside Hospital on Toronto Island, with most satisfactory results. There is no special ward for tuberculous children in the Toronto Free Hospital for Consumptives at Weston.

DISPENSARIES.

1. Dispensary of the Montreal League for the Prevention of Tuberculosis, 691 Dorchester Street. Opened November, 1904. Open six days weekly. Last year 193 patients attended. When too ill to attend they are visited in their houses. Patients are supplied with all necessities in the way of food and clothing.

2. Tuberculosis Dispensary and Clinic, Toronto General Hospital. Opened January, 1906. Visiting nurse visits at homes and reports surroundings and conditions. Patient given sputum flask, etc., with instructions. Food and clothing supplied when needed. Special wards available if necessary to bring patients into hospital. Houses reported to Board of Health for fumigation. When possible patients sent to sanatorium at Weston or Gravenhurst.

3. Tuberculosis Dispensary of Hamilton City Hospital. Opened 1906.

Brehmer Rest, Ste. Agathe des Monts, Quebec. Dr. A. J. Richer, Physician-in-charge; Miss Barnard, Secretary, 33 Lorne Avenue, Montreal. Patients pay \$4 per week.

This sanatorium has been instituted for the care of patients who have no active tuberculosis, but who are convalescing from pneumonia, pleurisy, and typhoid fever, also patients with anæmia, debility, etc. Such institutions play an important part in the prevention of tuberculosis.

WHAT REMAINS TO BE DONE.

This summary of the antituberculosis work in Canada shows that much has been done in recent years. Each year new measures are brought forward, an increasing number each year, and yet we have little more than begun—much earnest work has yet to be done to secure a marked decrease in the death rate throughout the Dominion.

There is still much apathy shown when active measures for the suppression of the disease are adopted—lax enforcement renders them useless. More than one local medical health officer has reported: "We have an antisputting by-law, but it is never enforced." In another town where no measures have been outlined, the health officer writes: "Public interest in this question is dormant. It is a labour of Hercules to even try to arouse it. Our Board of Health takes no interest in tuberculosis patients."

The work of prevention requires the co-operation of all the forces available. We must first deal with those suffering with the disease, for inasmuch as the disease is spread only from those having an open tuberculosis, we must concede (leaving out of discussion here the communicability to man of bovine tuberculosis) that the disease would soon all but disappear could all who have an open tuberculosis be placed under proper discipline, and all sputa and other bacilli-bearing discharges be destroyed.

This entails much work on the part of the physician who is attending the patient; full personal instructions must be given, and these instructions must be carried out. Leaflets of instructions to patients are very useful, but personal instruction is more efficient.

For those patients who will not follow the directions given, and are careless, special hospitals for detention are necessary, and such should be provided for such people as are wilfully unclean, and whose habits are such that they are spreading disease about wherever they may be.

Sanatoriums are a necessity for the care of those who cannot be kept under close supervision at home, or whose surroundings are not conducive to recovery—whether this be from insanitary conditions, the presence of meddlesome relatives and friends, or the thousand-and-one petty things which prevent a patient following the necessary out-of-door

life and observing the prescribed rest or exercise. More sanatoriums are required throughout Canada, particularly for the poor who are not in a position to go far from home.

Separate provision should be made for incipient and far advanced cases.

Special dispensaries can do much for those who must continue at work, as in the case of a breadwinner in a poor family. The dispensary physicians and nurses can see that his house is suitable, and can assist in arranging for out-of-door sleeping, can see that he is provided with all necessities, and also be assured that he is careful of those about him. The dispensary staff, too, should examine at intervals all of the family, so that any infection may be discovered while still a closed tuberculosis.

Physicians in attendance upon all cases, whether poor or in good circumstances, should endeavour as far as possible to see that all the members of the family are carefully watched—particularly so in houses where the patient has been known to be careless, or where, as is not infrequently the case, he has been suffering with an open tuberculosis the presence of which has not been suspected or recognized.

The members of tuberculosis families should be given special instruction in hygienic living, and be warned of the dangers of lowered vitality, whether due to disease, overwork, poor food, or vice.

The physician should be proficient in diagnosis and should endeavour to make diagnosis early, remembering that under sanatorium treatment 75 per cent. of incipient cases recover, of moderately advanced about 15 per cent., and of far advanced cases barely 1 per cent. To state that the physician is often careless is unpleasant writing, but again and again we meet such cases. An instance such as the following is, unfortunately, far from uncommon. A young man came to me for examination and treatment. I found far advanced disease involving all of the left lung and half of the right, with well-marked cavity formation in the left upper lobe. There was also intestinal tuberculosis. Sputum 1 oz. daily, teeming with tubercle bacilli, and much elastic tissue present. I gave his mother a report, with necessarily an opinion of hopeless prognosis. He is the only son and she a widow. She writes:

“It is all so uncalled for. I have had him under medical treatment for five months and all along urged that he have the best attention, and if his lungs were in danger I would send him away from home if necessary. I have been exceedingly anxious for four months and wanted a consultation, but my physician assured me only a few days

before my son left home that there was nothing wrong with the lungs. I was so anxious, however, that I sent the sputum to the provincial bacteriologist the next day on my own account, with the result that my worst fears were realized.

No comment is needed. In my work I see this too frequently.

Notification of all cases of tuberculosis is necessarily a part of efficient work in the crusade, and where there is a live, earnest Board of Health which will co-operate with the physicians, no time should be lost in enforcing compulsory notification.

Local associations can do much in assisting the authorities. They can carry on an educational campaign, disseminate knowledge concerning the methods to be adopted for the prevention of tuberculosis, assist in movements for the erection and maintenance of sanatoriums, special hospitals, dispensaries, etc.

We must not forget that every measure that makes for a higher standard of living is of value in the campaign against tuberculosis. We should see that our houses, our towns, our cities, are rendered as sanitary as possible, admitting sunshine, avoiding dust-gathering rags and hangings, keep our streets clean, do away with the smoke nuisance, destroy insanitary buildings, inspect our schools, workshops, and factories, arrange for medical inspection of school children and of workmen in factories, especially those whose occupation predisposes to tuberculosis.

Our Federal and Provincial Governments must pay much more attention to the subject of human tuberculosis and make liberal and judicious appropriations to be expended along proper lines before much headway can be gained. Do we not feel rather ashamed that our Dominion Parliament expends yearly large sums to combat tuberculosis in cattle but has not annual appropriation to combat human tuberculosis, which carries off 10,000 of our citizens each year? It spends many dollars per head to bring in immigrants, but will make no expenditure to assist in stopping this large yearly migration.

Every individual, every municipality, every province, as well as our Federal Government, has a special duty in this crusade to fight a disease which has attacked over one-half of our homes.

By increasing the efficiency of the means now at our disposal, by the introduction of such measures where now none obtain, and by earnest, active, aggressive work of education our large annual mortality should soon show a marked decrease.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

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No. 11

EXAMINATIONS FOR LIFE INSURANCE.

We have been favoured by Dr. Laurendeau with some details of the propaganda which he has undertaken to compel insurance companies to accept as a basis of contract the terms which may be put forward by Medical Societies. The establishment of a minimum wage is a new doctrine in the profession of medicine, and the whole question is worth examining.

It has always been the custom of Medical Societies to establish a tariff of fees for the guidance of their members, and the information of the public; but such a scale has never been mandatory. It has always left the practitioner free to accept the remuneration named, to demand more, to accept less, or to render his services gratuitously if he desires.

We say at once that this is the proper position for members of a profession to adopt—to demand as much as they can get, to accept as

little as they like. To establish a rate below which they will not work is to abandon all professional decorum, and enter into the ranks of the trades-unions with carpenters, plumbers and house-smiths.

We are not disposed to underestimate the value of belonging to a medical society. We place a still higher estimate upon the freedom of the individual to decide what work he shall do, and the conditions upon which he will do it. If a physician take it into his head to demand five or ten dollars for an examination and an opinion, he is within his rights; if he choose to render the same service for nothing, no one will affirm that he has transgressed any just rule.

Economy is now the formula of insurance companies. One company, at least, shows for the first eight months of the present year a saving in expenses of close upon four million dollars. Of this saving near three hundred thousand dollars is credited to the medical department, and there is no evidence that the work is being done inefficiently. The agitation on the part of Medical Societies for a higher fee will only hasten the policy which many companies are now pursuing of appointing salaried medical officers.

The American insurance companies cannot very well help themselves. In New York they are restricted by law as to the amount which they may expend for new business, and the examining fee comes under that head. The agent has had his commission cut to the bone. The medical examiners are getting their cut in turn.

An insurance company is not in the nature of things a trust company. It is a commercial partnership, in so far as the assured shares in the profits. Up to a year ago, under the liberal management which then prevailed, the profits to policyholders in the best companies were very large, and it was never questioned that their investments were unsafe. True, there was some waste, as there is in every rapidly-growing business, but the amount was trifling in comparison with the profits. Taking the total number of policyholders, the wastage, putting the worst face upon it, amounted to seven cents per year upon a profit of one dollar.

We are offering no opinion upon the relative merits of the old system and the new. We are merely saying that things have changed. Insurance companies are now in the category of trust companies. The managers have no inducement to seek new business. Indeed, they are limited by law in the amount which they may accept. That amount will come without much solicitation. In times past the insurance agent was a familiar figure. Who has seen one within the last year?

The point which we are making is that the companies do not now care much whether they get business or not. If they find difficulties

in any one field, they have no hesitation in withdrawing from it. If the business does not warrant their employing a salaried medical officer, and they cannot have examinations made for the fee which they think they can afford, then they will withdraw from that field.

In our judgment a fee of three dollars is not sufficient for an examination for life insurance, though we are obliged to admit that in certain cases a larger fee is allowed. The contention of the companies is that this fee is in excess of that usually paid to practitioners, especially in the country. Even if this be admitted, the fact is susceptible of some qualification. A physician who visits a patient usually meets with a ready reception. He does not find the patient away from home, nor is he asked to call at a more convenient time. Indeed, an examiner of some experience informs us that the financial results work out to less than a dollar and a half a visit. The real fallacy lies in the assumption that a visit to a patient may be in any way compared with a visit for life insurance examination. The one is purely professional. The other is in a degree commercial. The physician who visits the sick is fulfilling his normal function. He is living his life in harmony with a noble tradition. A physician who ministers faithfully to his patients is sure of his reward in the consideration which he wins, in the extension of his good report to others, in advancement in his profession. As an examiner none of these rewards are open since the point of view of the patient and the applicant is quite different. When the examination is over the examiner has had his reward, and it is all which he will get.

The medical profession is face to face with a new condition which it cannot alter. The companies have offered a fee which is fairly uniform, and we do not believe that any individual company will depart widely from the standard. Medical societies may make life-insurance difficult. In some localities they may destroy it. We do not believe that any agitation will restore the old fee of five dollars. Even if the combination of Medical Societies be more close than it is likely to be, we do not believe that any results will be accomplished, and the Medical Societies will have put themselves in the wrong by the attempt.

UNITY.

The great work of mediation between England and France, those two hereditary foes, which was undertaken by His Majesty King Edward has reached its fulfilment in the recent outburst of affection

between the medical students of McGill and Laval. Now they are brethren dwelling together in unity.

Only five years ago the students on the hill were impelled to descend upon Laval, breathing out threatenings, and signifying their sentiments towards the sister institution by breaking windows. They were received with inhospitable streams of freezing water; it was only a bit of English aggression and French pleasantry.

Yet the importance of such sympathy cannot be overestimated. These are the men who will meet together in consultation, who will discuss their cases in a common Society, who will sit side by side, and give counsel in the College of Physicians over the welfare of the profession. These grave seniors of twenty years hence cannot forget the days when they were welcomed to invade the laboratories of McGill with their "Marseillaise," and made holiday together over their sports.

We appear to be living in the golden age. At the last meeting of the College of Physicians the representatives of McGill proposed a reciprocity with Great Britain and the principle was instantly agreed to. The College announced that in future it would enact a five years' course of study from candidates for the license; and forthwith the McGill Calendar appears with an inset printed in red ink that a five years' course would be instituted.

A great French surgeon visited Montreal and all, French and English, sat down together to do him honour. Those who were present at the feast report that in the new spirit of amity the gift of tongues descended upon the company. As a result of the negotiations between Bishop's College and McGill the names of all Bishop's graduates appear in the McGill Calendar. It would not be surprising if, in the future, one volume would serve for McGill and Laval also.

CANADIAN MEDICAL ASSOCIATION.

The report of the special committee upon the re-organization of the Canadian Medical Association has been issued along with a draft of a proposed new constitution and by-laws. The draft of the constitution and by-laws appears to be well drawn, and likely to cover every circumstance which may arise. It does not differ materially from the form employed in similar institutions, and if carried out should provide ample for all immediate needs.

Section 5 of Article II. deals with the vexed question of publication of papers, and reads: "All papers, essays, photographs, diagrams, etc., presented in any section, shall become the property of the Association, to be published in the official journal of the Association or not as

determined by the Finance Committee, and they shall not be otherwise published except with the consent of the author and of the Finance Committee."

Construed strictly, as all by-laws must be, it means that no paper read before the Association can be published save with the consent of the Finance Committee in a journal which has no existence. This, we think, is going to an extreme, because some of the papers read before the Association must surely be worthy of publication somewhere.

The presumption is that the Association purposes founding a journal of its own, but we are obliged to confess that the proposal does not look very attractive. The field is pretty well occupied, Toronto itself being provided with four periodicals. If all interests could be brought together, and merged into one Canadian journal, we would have an organ worthy of the country and of the profession. To such an effort we promise all the support which we can give.

This JOURNAL has been favoured with the second report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. The functions of these laboratories are to promote technical education; to promote the study, bacteriologically and physiologically, of tropical disorders, especially the infective diseases of both man and beast peculiar to the Sudan, and to render assistance to the officers of health, and to the clinics of the civil and military hospitals: to aid experimental investigations in poisoning cases by the detection and experimental determination of toxic agents, particularly the obscure potent substances employed by the natives; to carry out such chemical and bacteriological tests in connexion with water, food stuffs, and health and sanitary matters as may be found desirable; to promote the study of disorders and pests which attack food and textile producing and other economic plant life in the Sudan: to undertake the testing and assaying of agricultural, mineral and other substances of practical interest in the industrial development of the Sudan.

The Director of the laboratories is Andrew Balfour, M.D., and the volume is published by the Department of Education of the Sudan Government at Khartoum. In so far as we can judge these laboratories are performing well these functions which have been recited. Apart from its scientific value the book is full of human interest and gives a more vivid account of life in the Sudan than any book of travel with which we are acquainted.

Notices have been sent to many physicians throughout the United States and are appearing in the medical and public press regarding

an "American International Tuberculosis Congress," to be held in New York City, November 14th to 16th next, and an association known as "The American Anti-Tuberculosis League," which is to meet in Atlantic City next June at the time of the meeting of the American Medical Association.

It should be stated that the gathering in New York next November and the one in Atlantic City next June have no connexion whatever with the International Congress on Tuberculosis authorized at the last session in Paris in 1905, which will hold its meeting in Washington in 1908, under the auspices of the National Association for the Study and Prevention of Tuberculosis. We are assured by Professor Adami that his name has been advertised in connexion with the former scheme wholly without his authority, and that to his knowledge no physician of prominence in the United States has signified his participation in the above "American International Tuberculosis Congress."

At its last meeting of the Provincial Board of Health, it was proposed by Dr. Simard, seconded by Dr. Bissonnette, and resolved: "That the Board of Health of the Province of Quebec wishes to place on record the services of the late Dr. Robert Craik, as a member of the Board." The following resolution was adopted: "The prestige of Dr. Craik among the English element which he represented on the Board, his excellent knowledge of sanitary science, his life-long training for administrative affairs, his practical resources for dealing with difficult questions and finding adequate solutions for the various sanitary problems, his broad-minded views, his mastering the French language quite sufficiently to take part in all discussions, made him a most useful member. His urbanity in all his relations with his colleagues and the officers made him a universal favourite, and renders his loss most painful among all those who were associated with him in sanitary work."

The *Journal of Obstetrics and Gynæcology of the British Empire* intends to issue a second special number devoted to the subject of Ectopic Gestation in December next. The Number for October contains an article by J. W. Ballantyne, which is a charming account of that most interesting work on midwifery, "The Byrth of Mankynde." There is also a discussion upon the originality of the work on the contagiousness of puerperal fever done by Oliver Wendell Holmes and Semmelweis. The editors offer the true solution, that a full knowledge of the situation was only gained by Pasteur and his successors.

The last number of *Le Bulletin Médical de Québec* contains a feature which is new to us in medical journals. This is a record in the form of a catalogue of the surgical procedure of the Hotel Dieu of Quebec during the month of August. The operations duly classified under various headings number sixty-one, and disclose the extent and variety of surgical work which is done in that venerable institution.

According to a recently published estimate, the expenses of the medical student in London may be figured about as follows: On entering one of the large medical schools the bare fees will amount to £30 per annum, with an addition for the first years of £20 as entrance fee—that is to say, £170 to cover the five years. To this must be added the fees for certain additional and necessary practical classes and material, entailing an extra cost of perhaps 12 or 15 guineas. Subscriptions to the students' club will absorb another 15 guineas, and books, instruments, etc., say, £30 more. When examination fees, say 40 guineas, are added, and the official register fee, £5, we get roughly £280; pocket money and lunch in town mean quite another £25 to £30 annually, while putting clothes, board, lodging, etc., at £85 to £100 a year, we reach a total of £850 to £900, if the student gets through in the five years.

The wonder to us is, considering that the majority of people eat too much, that there is not more headache in the world. When total abstinence societies and temperance associations are formed everywhere, men forget that there is such a thing as gluttony in the world. So far as our experience goes we have seen more instances of people suffering from the results of over-eating in Madras than from over-drinking. And the one advice which we will ask medical men in Southern India to give to their well-to-do patients is to eat less. That will not only save them from headaches in a good many cases, but will help them to live far more comfortable and healthy lives than they do at present. *The Antiseptic*, Madras.

It is officially announced in the *London Gazette* that Dr. Diarmid Noel Paton has been appointed to the chair of physiology in the University of Glasgow *vice* Professor John Gray McKendrick, LL.D., F.R.S., who has resigned.



JAMES STEWART, M.D.

Obituary.

JAMES STEWART.

James Stewart—a simple man with a simple name—died in Montreal on the sixth day of October, 1906, in the sixtieth year of his age. At the time of his death he was Professor of Medicine in McGill University, and Physician to the Royal Victoria Hospital.

Dr. Stewart was the son of the late Alexander Stewart, by his wife, Catherine McDiarmid, and was born at Osgoode, County Russell, Ontario, on November 19th, 1846. He was educated in the Public School, and at the Ottawa Grammar School. In 1865 he entered the Faculty of Medicine of McGill University, and graduated in 1869, being then in the twenty-third year of his age. His name does not appear in the prize list of his class. He began the practice of medicine at L'Orignal. Afterwards he removed to Varna, then to Brucefield, then to Winchester. In 1883, he proceeded to Scotland, where he obtained the qualification of Licentiate of the Royal College of Physicians and Surgeons of Edinburgh. In the same year he returned to Montreal and was appointed Professor of Materia Medica and Therapeutics in the Medical Faculty of McGill University. In 1884 he became Registrar of the Faculty, a post which he held till 1891. In 1891 he was appointed to the Chair of Clinical Medicine, and in 1893 to the combined Chair of Medicine and Clinical Medicine.

In addition to these University appointments he was physician to the Royal Victoria Hospital since its foundation; and an honorary president of the section of medicine at the second Pan-American Medical Congress, held in Mexico in 1896. In 1897 he was vice-president of the section of medicine at the British Medical Association meeting in Montreal, and in 1903 he was president of the Association of American Physicians. Nor may we omit to mention his services upon the Editorial Board of this JOURNAL.

The death of Dr. Stewart leaves an obvious break in the ranks of the medical profession, a keen sense of want in the affections of his friends, and amongst the public at large a feeling of loss.

When he fell ill the younger members of the profession went about in perplexity. Men of his own age wondered to whom they would turn for a fresh perception of an intricate case. Persons who were sick were unwilling to die without the formality of a consultation with a physician upon whom the profession appeared to depend. It is worth enquiring for our own instruction why these things are so.

Dr. Stewart was devoid of exterior grace in manner or in speech. His manner was simple almost to rudeness. His disinclination to talk went nearly to the point of silence. Nor did he find an outlet in writing for the expression of those inward graces which all who came in contact with him felt that he possessed.

The truth in this enigma is that Dr. Stewart achieved his high position in the hearts and minds of his fellow men not so much by what he did as by what he was. In virtue of his inherent quality, simplicity of manner was redeemed from awkwardness, and became gracious; his reticence had nothing of taciturnity, nor had his silence anything of reserve. It was as if a subtle sympathy went out from him, which did not require speech for its expression.

There is something more. Dr. Stewart was learned in medicine. But he had transmuted learning into knowledge, knowledge into wisdom. Learning was his raw material, and when, through experience, he had converted learning into sagacity, it faded into the texture of his mind, and had no longer an independent existence. Facts and theories were to him the mere tools with which he worked in the secrecy of his own mind.

This acquaintance with the best which had been said and thought and done in medicine came to him as only it comes to the man who scorns delights and lives laborious days. He was the first in Canada, we believe, who systematically went to headquarters, and persistently enquired what men knew.

He was as well known in Vienna as in Montreal, in the one place a learner, in the other a teacher, teaching by his work with his patients, not by handing out theories to his students.

A simple character is always the most perplexing. That is why we find it hard to make clear that Dr. Stewart was sober, yet not sombre: shy and retiring, yet no recluse: himself without wittiness, yet the cause of merriment in others. The grasp of his hand, and the gaze of his steady eyes were more eloquent than any speech. His touch upon one's shoulder was more affectionate than an embrace. Still more curious, it is when members of the profession meet together to make merry that he is most missed. His spring of humour was small, yet it came from a great depth; and wherever he was there was a feeling of trust, of good nature, and all things which are friendly to good feeling.

We are not pretending that Dr. Stewart was a universal genius, or even a genius of any kind. He would have smiled a contradiction, had anyone made so silly a statement in his hearing. His capacity for organization was not high, nor was his judgment of either men or affairs very good. His initiative was small, and his counsels were always in favour of retaining the thing which had been. Nor did he interest himself much in matters which lay outside of medicine, in books, in men, or in women. For one who so ardently desired peace and quiet he had a strange liking for histories of war and accounts of battles. Few men were better informed upon the wars of the past century. The only public capacity in which he figured was as President of St. Andrew's Society, and even that rôle was not much to his liking.

A Resolution passed at a meeting of the Medical Faculty of McGill University, Monday, October 8th, 1906, is an earnest of the high esteem in which he was held by his colleagues who knew him best.

"RESOLVED, That the Members of the Medical Faculty of McGill University desire to record their sense of the deep loss which they have sustained in the death of their esteemed colleague and friend, Dr. James Stewart, Professor of Medicine and Clinical Medicine.

"Dr. Stewart's connexion with the Faculty of Medicine has been a long and brilliant one. From the moment of his arrival in Montreal in 1883 he was intimately connected with the work of the Faculty, as Registrar, and as Professor of *Materia Medica* and Therapeutics. Subsequently he was appointed to the Professorship of Clinical Medicine, and later to the combined Chair of Clinical Medicine and Theory and Practice.

"In addition to his University appointments he was intimately associated with the hospitals of Montreal, as Attending Physician—first in the Montreal General Hospital, and subsequently in the Royal Victoria Hospital.

"As a teacher Dr. Stewart earned an enviable reputation for simplicity, and lucidness, an intimate knowledge of the literature, and the power of presenting tersely the salient features of his subject.

"As a physician his practice was characterized by sound judgment, wisdom, and never failing common-sense, which never lost itself in useless verbiage,—qualities which assured him ample recognition by the medical profession and the public, not only in Montreal, but in the Dominion at large.

"His reputation was further enhanced by numerous and valuable contributions to the literature, particularly in the domain of neurology, to which he devoted special attention.

"To these qualities of the mind were added those of the heart, which most appealed to his patients—a quiet but none the less deep sympathy,—a readiness at all times when called upon to render assistance, and a steadfastness that knew no wavering.

"In private life his conduct was marked by a high sense of honour and truth, and a desire to fulfil in all respects the highest ideals of his profession. Of a retiring disposition, he was ever averse to the publicity which his many talents and high position might have gained him, though he was the recipient of many honours which were not of his seeking, but were a tribute to the esteem in which he was held by the profession in Canada and the United States.

"In this brief and inadequate testimony to their late colleague the Members of the Faculty of Medicine desire not only

to express their personal loss but to convey to his sorrowing relatives sympathy in their bereavement."

To conclude, we cannot do better than to reproduce the words of Rev. James Barclay, spoken at the funeral ceremonies in St. Paul's church. They are better than those which we have employed:

"We are met to pay our tribute of respect and affection to one whose professional fame and whose personal worth were widely and gratefully recognized, not only in this city, but throughout the Dominion. Had he himself been asked what should be said on this occasion, he would have answered: 'Let little or nothing be said.' If ever there was a man who was content to live unnoticed, and who would have been content to die unnoticed, it was Dr. James Stewart. All the honours that came to him in life were unsought. They were thrust upon him as the inevitable reward of sterling work and genuine worth. He was a man of retiring and reticent nature, and of a singularly quiet and unobtrusive bearing, and it was only those who knew him well who knew the riches of both mind and heart that lay hidden behind the simple and unassuming manner. He bore his weight of knowledge and skill, and the burden of his honours 'lightly like a flower.'

"He was a member of a noble profession, and he further ennobled it by the integrity of his character and of the unselfishness of his services, and he enriched it by his valuable contributions. He was devoted to his life's work — an earnest and faithful student in his earlier days, he continued still to be a student when he had been promoted to a high place in the rank of teachers. Simplicity, sincerity, reverence, unselfish kindness, these were the features of Dr. Stewart's character that most impressed those who had the privilege of knowing him. Honoured as perhaps few men have been with the confidence and esteem of his professional brethren, revered with the respect and affection of his students, he was trusted and beloved by his patients, and warmly appreciated by his personal friends. Montreal loses in him one of its worthiest citizens, and the medical profession loses one of its most gifted and most esteemed members. The knowledge he acquired and the skill

to which he attained were ever regarded by him, not as means to self-promotion, but as gifts to be used in the service of his fellow-men, and that service was rendered with an unselfish readiness and generosity which secures for his memory a warm place in many a heart to-day. Not what he might make for himself, but what he might do for others was the prevailing purpose of his life. Could he have known all the grateful and loving recollections that have been awakened by his death, all the kindly things that have been said of him, by his brethren, by his patients, by his friends, he would have felt that his life had not been in vain. 'He being dead, yet speaketh.' Through his teaching and his example he will still live, and the fruits of his life will be seen in the lives of many of the students who were privileged to know him as teacher and as pattern."

Reviews and Notices of Books.

AMERICAN PRACTICE OF SURGERY. BRYANT and BUCK. Vol. I.
William Wood & Company, New York, 1906.

This volume is the first of the new system of surgery which is being brought out by Drs. Bryant and Buck, and one may say at the outset that if the promise of this first instalment is fulfilled the whole work will be one worthy of American surgery. A feature of interest to Canadians is that several of the chapters have been, and in the succeeding volumes are to be, written by Canadians. Volume I. is divided into five parts, as follows: "Surgical Pathology," "Complications and Sequelæ of Surgical Conditions," "General Surgical Diagnosis," "General Surgical Treatment," and "General Surgical Prognosis." There is in addition an introductory chapter of an historical nature upon the Evolution of American Surgery, written by Stephen Smith of New York. It is a full survey of the history of American surgery written in pleasing style. The chapter on Surgical Pathology, to which several men have contributed, is excellent. The whole occupies close upon 400 pages. Inflammation is taken up by Warthin of Ann Arbor. Disturbances of Nutrition in connexion with Surgical Diseases and Conditions, and Tumours and Tumour Formation, are both written by Professor A. G. Nicholls of McGill, while Gaylord contributes a very interesting summary of our knowledge concerning the parasitical relations of cancer. Both Dr. Nicholls' chapters are thoroughly well done, up-to-date from the pathological aspect, and from the literary side written in a style which is a pleasure to read. His illustrations, which are all drawn from the McGill Museum, or from his private collection, are especially worthy of note. Of the recent study upon tumours, especially their pathogenesis, Professor Nicholls presents a very satisfactory account in the space at his disposal. He sets forth strongly the view held by most of the present day pathologists upon the non-parasitic nature of cancer. It is interesting to read the following chapter by Gaylord upon the same subject which presents, very strongly too, it may be said in passing, the infectious origin of cancer. All the late work of Ehrlich and Apolant, Jensen, Loeb, and the many other workers, including his own valuable contributions from the New York State Laboratory, is brought up to date.

The chapter upon Inflammation in its Surgical Aspect, by Warthin, is sufficiently full, but one misses a discussion, even the very mention of the recent work upon Opsonins, of Bier's artificial hyperæmia, and

Klapp's suction cups in treatment. These, which have lately become so prominent, deserve at least some notice. The chapter upon "Infections which sometimes occur in various surgical diseases and conditions," by Paul Munro Pilcher of New York, leaves perhaps something to be desired from the pathological standpoint, but the clinical side is excellently handled. To cite one instance: it can hardly be said nowadays that the cause of *gangrène foudroyante*, or emphysematous gangrene is the bacillus of malignant œdema. The few chapters devoted to tetanus are hardly sufficient for a disease of its gravity, and for one that is yearly claiming greater interest. The enormously important experimental work of Myer and Ransome, Marie and Morax, and others, is given but scant mention in view of its very radical bearing upon clinical work.

Of the article on Shock, contributed by Bloodgood of Johns Hopkins, it is difficult to speak too highly. In the space at his disposal he has resumed thoroughly all the recent contributions, especially of Crile, to the subject, including a consideration of Lenander's observations on the sensibility of tissues, and those of Bier and others on spinal anæsthesia in so far as these observations bear on shock. Not a little on this subject has been done by the Hopkins' school with their blood pressure methods and their intraneural method (Oberst) of local anæsthesia. This aspect of the subject is naturally given a thorough appreciation.

Under the heading of General Surgical diagnosis we have four chapters, 1, the general principals of surgical diagnosis; 2, the body fluids in general surgical disease, with special reference to their diagnostic value; 3, the epiphyses and their radiographic interpretation, and 4, the technique of radiographic work and the interpretation of radiographs. The two chapters upon radiographic work are good; that upon the epiphyses is hardly full enough, but the other by Osgoode and Dodd of Boston (two of the best men in America), is one very greatly needed by the general practitioner, and will prove a valuable contribution. The chapter on General Surgical Prognosis, a somewhat difficult subject, is by Bacon of New Haven. He has given the subject excellent treatment, and we note with pleasure that he includes the newer work on diabetes and "acidosis." The General Surgical Treatment is written by J. H. Moore of Minneapolis. It represents the wide experience of a surgeon of the higher type, one who believes in perfect technique, but believes still more in judgment. He lays constant emphasis upon the necessity of simplicity in the mechanical side of surgery, and upon a properly grounded knowledge of principles in

the training of surgical judgment. Inevitably in a book of this kind, written by several authors there must be inequalities, nevertheless one can give one's hearty recommendation to the work considered as a whole.

E. W. A.

IN THE VAN. By DR. PRICE-BROWN [Eric Bohn]. Illustrated by F. H. Brigden. Toronto: McLeod and Allen.

Dr. Price-Brown is the most recent of those physicians who have made an excursion into the precincts of literature, "as a pastime," he tells us, "from the rigors of professional life." Certainly, Dr. Brown must have passed the time pleasantly in so agreeable a diversion. It is fair, however, to say that literature is not merely a pastime for the writer. It is an engaging and absorbing employment, a hard trade or art; and if effective work is to be done it must be undertaken with other motive than a desire to pass the time. Literature and medicine are hard masters. A man cannot serve both. There is evidence in this book that, if Dr. Price-Brown were to yield to these hard terms, he might tell a story as well as Mr. Macdonald Oxley or the late G. A. Henty. His style of writing reminds one of these two authors.

"In the Van" is a novel, and groups the incidents around the war of 1812. The details of the military movement are given with precision and accuracy, and must have cost the author infinite research. The accounts of battle are spirited, and the narrative of the march from Halifax to the Great Lakes is full of incident.

The book is a series of scenes or incidents rather than a continuous narrative bound down to a leading theme, and many of them hamper rather than help the story. The sea-fight in Chapter VII. is a case in point. Besides, perhaps Toronto is not the best place in the world for acquiring a feeling for salt water. Sailors do not speak of the "big mast," nor has it ever been the custom to indicate the time of day on board ship by "nine bells." We could wish for a little more constraint in description. The time has gone by for the employment of such expressions as "with a convulsive leap the young man's heart seemed to bound into his throat." A physician of Dr. Price-Brown's accomplishment, whose specialty is laryngology, should not fall into that error.

INTERNATIONAL CLINICS, Vol. III., Sixteenth Series. Edited by A. O. J. KELLY. J. B. Lippincott Company, Philadelphia, 1906.

This volume of the International Clinics does not strike one as being particularly attractive either in subject or treatment. There is, how-

ever, an account of life in the Antarctic regions from a medical point of view, by Dr. Harvey Pirie of Edinburgh, who was medical officer to the Scottish Expedition of 1902-04.

THE MEDICAL EPITOME SERIES. Edited by V. C. PEDERSEN, M.D.
MATERIA MEDICA AND THERAPEUTICS. By EDWARD J. KIEPE,
Ph.G., M.D. Lea Brothers & Company, Philadelphia and New
York.

This series of epitomes is intended to place the respective subjects concisely before the students. This book upon Materia Medica and Therapeutics does do.

THE PRACTICAL MEDICINE SERIES. Edited by GUSTAVUS P. HEAD.
The Yearbook Publishers, 40 Dearborn Street, Chicago.

We have before us of this Series the following volumes:—General Medicine, edited by Frank Billings, M.D., and J. H. Salisbury, M.D.; Obstetrics, edited by James B. DeLee, M.D., and two collaborators; Gynæcology, edited by Emilius C. Dudley, M.D., and C. von Bachelles, M.D.

These volumes are three of a series of ten which are issued at about monthly intervals, and are intended to cover the field of medicine and surgery. Each volume is complete for the year prior to its publication on the subject of which it treats. The series is published in the main for the general practitioner, but the arrangement in several volumes enables those interested in special subjects to purchase only the parts which they desire. We have frequently mentioned these volumes, and expressed the opinion, which now we reiterate, that if a general practitioner would master the contents of these books he would have a wide and varied knowledge of his profession. The series is well edited, and carries out adequately the idea by which it is actuated.

CHEMISTRY; GENERAL, MEDICAL AND PHARMACEUTICAL. A Manual
by JOHN ATTFIELD, F.R.S.; edited by LEONARD DOBBIN, Ph.D.
19th Edition. Lea Bros. & Co., 1906, Philadelphia and New York.
\$2.50 net.

The first edition of this book appeared in the year 1867; and since that time it has passed through 19 editions. In addition to this presumption of excellence we are informed that a gold medal was awarded to the author of this manual in Vienna in 1883, and in 1896 the prize of a diploma of honour. During these 40 years we have had occasion to mention the successive editions always with praise, and

now it only remains to say that a new edition has appeared. In this time the book has grown from a handbook of practical chemistry only to a considerable volume of over 700 pages. We hasten to add that nothing of recent importance has been omitted from this standard textbook. It is entirely probable that present-day students will accord to this volume the favour which it has received from so many generations of their predecessors.

A PRIMER OF PSYCHOLOGY AND MENTAL DISEASES. By C. B. BURR, M.D., Medical Director of Oakgrove Hospital for the Insane, Michigan. 183 pages. F. A. Davis Company, Philadelphia. \$1.25 net.

Dr. Burr is known to all who are interested in mental diseases from his long occupancy of the position of Secretary to the American Medico-Psychological Association. This is the third edition of his little work and is entirely adequate for the needs of the student. Dr. Burr's pleasant personality pervades the book.

PHILADELPHIA HOSPITAL REPORTS, Vol. VI., 1905.

This volume is issued by the Department of Public Health and Charities having charge of all the institutions of charity in the control of the City of Philadelphia. This volume affords information about the work which is being done in the more important medical institutions of Philadelphia. In addition to this the book is of value in giving many local circumstances in connexion with that important centre of medical practice and research.

PHARMACOPŒIA OF THE MONTREAL GENERAL HOSPITAL AND THE ROYAL VICTORIA HOSPITAL. Published by a committee composed of members from both Hospitals' Medical Board.

The combined pharmacopœia of the Montreal General Hospital and the Royal Victoria Hospital, long talked of, has at last made its appearance. This constitutes the third pharmacopœia issued by the Montreal General Hospital, but though it is possible to recognize the former edition, many alterations and numerous additions have been made, some no doubt due, as the name signifies, to the leaven of the younger hospital.

That it will fill a long felt want in both institutions, its publication indicates; though its warmest reception will doubtless come from the student body, who are now in a position to criticize and approve the formulæ tested and tried by their teachers, and who can now more readily understand the somewhat enigmatical prescriptions frequently appearing on the out-patient's card.

As an educational factor in the practical therapeutics of the university it is bound to play a large part, and this we venture to think it can well do. The book consists of eight sub-divisions beginning with those formulæ in general use, and ending with directions for the sterilization of various surgical appliances; the latter filling a long felt vacancy in the wants of the student and recent graduate. Other sub-divisions supply the needs of the various specialists. Throughout the book the metrical system figures, though the old measure is also largely retained.

With the exception of the few typographical errors, such as seen on the last page, this little book of 80 pages, in clear type and bound in limp cloth, is one of which the committee who are responsible for it may feel will be to the credit of the two hospitals.

MANUAL OF ANATOMY. By A. M. BUCHANAN, M.A., M.D., C.M., Professor of Anatomy, Anderson's College, Glasgow. Vol. I. Osteology, Upper and Lower Limbs: 268 illustrations. London: Baillière, Tindall & Cox.

Another anatomy for the poor overworked student. With so many good textbooks and dissections is there room for another? Professor Buchanan evidently thinks so. This work is a combination of a textbook and a manual on practical anatomy. After 259 pages devoted to Osteology and illustrated by a number of rather crude but very understandable drawings (many in colour), the anatomy of the upper and lower extremities is taken up. This part is on the lines of a dissecting manual, and is very good. First, surface markings are given; then the muscles, vessels and nerves are described as met with in these regions, and finally the joints. These are described in the order with which they are met with in dissection. Embryology is also dealt with after the description of each part or organ. The first volume is good and up to date; but there has not been much change in the anatomy of bones, and the extremities, for a good many years. The true test of the book will be the volumes on the viscera and nervous system. This first volume is very suitable for the first year students as it contains nearly all, though not all, the amount of information required.

Medical News.

MONTREAL GENERAL HOSPITAL.

During the month of September there were admitted to the Montreal General Hospital 271 patients, and 260 were discharged; the deaths

numbered 17. In the Out-Door there were 4,018 consultations, and the ambulance responded to 136 calls.

ALEXANDRA HOSPITAL.

The admissions, discharges and deaths at the Alexandra Hospital from 9th July until September 30th are as follows:

	Admitted.	Discharged.	Died.
Diphtheria..	37	20	3
Scarlet Fever	20	7	0
Measles..	8	8	0
Erysipelas	1	0	1
No disease.. . . .	1	1	1
Total.	67	36	4

The annual meeting of the Winnipeg Medical Association was held on 8th October. President Bell was in the chair, and after the annual reports had been read, the following officers were elected for the ensuing year: President, Dr. E. W. Montgomery; first vice-president, Dr. J. R. Davidson; second vice-president, Dr. N. J. McLean; secretary-treasurer, Dr. C. H. Vrooman; councillors, Drs. McKenty, H. Mackay, Galloway and Todd. Dr. Bell, the retiring president, then gave his address.

At the Aberdeen University quater-centenary celebration the honorary degree of LL.D. was conferred on Dr. A. B. Macallum, F.R.S., Professor of Physiology in the University of Toronto; on William Peterson, C.M.G., Principal of McGill University; on Fred. P. Walton, Professor of Roman Law at McGill University, and on William Wilfred Campbell, of Ottawa.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

"Sympathetic Ophthalmia." Editorial in *Boston Medical and Surgical Journal*, October 11th, 1906.

During the past year two researches in this field, of more than ordinary interest, have appeared, and indeed the second of these gives promise of being a notable advance.

In the first article referred to Professor Fuchs* presents one of the admirable studies for which he is so justly noted. It has been known for many years that the histologic changes of sympathetic ophthalmia are characteristic. Fuchs reports that he has been able to make the diagnosis with the microscope alone in 181 cases. He presents a very complete pathological description of the disease and gives new and important data as to the locality of the lesions and as to the frequency of their occurrence.

The second study comes from zur Nedden of Bonn, and is along experimental lines. A few years ago Schirmer succeeded in two instances in producing a process of rabbits' eyes similar to sympathetic ophthalmia by inoculating pieces of the ciliary body from eyes removed for this disease. Zur Nedden has accomplished this and advanced much further. By transferring blood from two cases of sympathetic ophthalmia to the vitreous of rabbits he has produced this disease. He has inoculated a second series of rabbits with vitreous from the first and again produced the process. From the second rabbit's vitreous he has obtained a bacillus which will cause a plastic uveitis when injected into the vitreous, the carotid or the venous system. By treating his second case with serum obtained from the first he was able to effect a rapid cure.

Zur Nedden himself is exceedingly cautious in drawing conclusions from two cases and expressly states that his results can only be regarded as suggestive until confirmed by a large number of observations.

Many ophthalmologists will recall the enthusiasm with which Deutschmann's experiments, apparently proving that infection of the second eye was due to the migration of bacteria along the optic nerve sheath, were received twenty-five years ago. The problem was regarded as solved. But later investigators failed to confirm his results and ophthalmology learned a lesson in conservatism. Thus zur Nedden's work will be accepted as he offered it, not as a final solution of the question but as pointing out the most promising direction for future investigations. He himself is Sæmisch's assistant and is regarded as one of the most productive of the younger German school.

A. D. BEVAN, M.D. "The Diagnosis and Treatment of Tuberculosis of the Kidney." *The Journal*, October 6th, 1906.

The views on the subject of kidney tuberculosis have changed greatly within the last twenty years. Although Ammor as early as 1833

* *Archiv. für Ophthalmologie*. Bd. lxi. Heft 2.

pointed out clearly the essential clinical points, it has only been within the last ten years that the diagnosis and treatment have been placed on a sound working basis, and even to-day the frequency and importance of the lesion is not generally understood by medical men. In 1885 H. Fisher, in the German Congress of Surgeons, condemned all extensive operation for tuberculosis of the kidney, especially nephrectomy; and in the same year von Volkmann said that he doubted whether operative treatment of the kidney or kidney pelvis had any real value. Some six years later Madelung stated nephrectomy was indicated when it could be definitely established that the process was limited to one kidney. The results obtained at this time were not good, the mortality being between 28—47 per cent. With improved means of examination, the information gained by the X-rays, the cystoscope, catheterization of the ureters, and cryoscopic examination of the blood and urine, this operation has come to give most excellent results and is now regarded as being one of the most successful operations in surgery. We now know that tuberculosis of the kidney is a fairly common disease, that it is almost always the result of infection through the circulation, and that it is primary in one kidney in over 90 per cent. of cases. Primary is here used in the sense that in the individuals affected it is this focus which calls most urgently for treatment, it is strictly secondary to some small and important focus in lung, gland, or bones. Tuberculosis of the genito-urinary tract, with but few exceptions, begins at one of four points, the kidney, tubes, epididymis, or prostate. The symptoms of kidney tuberculosis frequently resemble those of other conditions, the principal ones being simple pyelitis and pyelonephritis, stone, and neoplasm. Other rarer conditions are the so-called essential kidney hæmorrhage and polycystic degeneration. In ordinary cases, when a differential diagnosis has to be made the following procedures are adopted, careful history and physical examination, several X-rays taken, examination of urine for tubercle bacilli, etc., a cystoscopic examination of bladder, especially of the ureteral orifices, and cryoscopic examination of the blood. Following this method it has been possible to make a correct diagnosis in over 80 per cent. Resection of the kidney is to be practically discarded, and nephrectomy performed when the disease is limited to one kidney. If both are involved, or when the patient's general condition is such as not to warrant any radical operation nephrotomy as a palliative measure to be followed if recovery takes place in general condition by a one-sided nephrectomy is indicated.

F. T. TRAVERS, B.S., Lond., F.R.C.S., Edin. "Suture of Perforating Wound of the Heart." *Lancet*, September 16th, 1906.

The case reported was that of a young man, aged 19, who fell on a spike of an iron fence and was impaled on it. The lower portion of the sternum was fractured, and a large portion driven into the ventricular wall of the right side of the heart and firmly held there, so that little hæmorrhage took place. Further examination by means of an osteoplastic flap showed the wound to be trifid, and extending up to the interventricular septum. On removing the piece of bone a profuse hæmorrhage followed, which was well controlled by plunging three fingers into the rent. The wound was first roughly closed, and then reinforced by a row through the muscular coats and again by a row of Lembert through the pericardial serous coat. The most noticeable features of the case were the plugging of the wound in the heart by the detached piece of sternum, and the tolerance shown by the heart to the injury and handling required at operation. The insertion of each suture was observed to act as a distinct stimulus. There was remarkable little collapse, no air-hunger or delirium. The severe injury to the pericardium induced excessive secretion, but produced no other symptoms as free drainage was secured. The case died on the eleventh day, the cause being apparently failure of the heart's action, due to the pressure of the clot slowly forming on its anterior surface, which also blocked the pericardial wound and prevented the escape of the blood oozing from the gap in the wound in the heart. The small opening was due to the necrosis of the heart muscle most probably due to the traumatism.

W. F. B.

MEDICINE.

UNDER THE CHARGE OF F. G. FINLEY, H. A. LAFLEUR AND W. F. HAMILTON.

M. H. NEMSER. "The Elimination of Calomel." *Zeitschrift für physiologische Chemie*, September 6th: Editorial in *N. Y. Medical Journal*.

M. H. Nemser has shed some light on the probable series of events that take place when colomel is taken into the gastro intestinal tract. Making use of intestinal fistulæ in dogs, and test tube experiments as well, he comes to the conclusion that the acid of the stomach has little

or no action on the calomel, and that if substances like corrosive sublimate can be formed from calomel in the body, which on *a priori* grounds has been assumed as probable, such mercuric compounds are at least not formed in the stomach within an hour and a half. The solution of portions of the calomel begins in the duodenum, and reasoning from his fistula and test tube results, Nemser believes that the pancreatic juice is the most potent factor in effecting the solution. What rôle sodium chloride (from the gastric juice) or the substances of nutrition may play in aiding this solution is as yet undetermined.

As to the absorption of the portion of calomel made soluble by the pancreatic secretions, the author believes that this takes place not higher up in the intestine than the ileum, in which place the process of solution reaches its maximum. It is highly probable that the soluble mercuric compound set free is either absorbed in the large intestine or precipitated by the sulphides present in that viscus, since the fæces contain no trace of soluble mercurial substances. The kidneys, the liver, and the large intestine retain a portion of the calomel for a considerable length of time, but as to the form of mercuric compound which is formed from the calomel in the process of solution, it is to be regretted the author does not enlighten us.

"The Clinical Value of Cryoscopic Examinations." Editorial in *N. Y. Medical Record*. October 13th, 1906.

It is nearly ten years now that Koranyi of Budapest applied the determination of the freezing point (cryoscopy) to the study of pathological urine. Since then work has been constantly going on in various parts of the world with this method, and the results obtained seemed to vary so much that a great deal of skepticism has been expressed, both here and abroad, as to the actual clinical value of cryoscopy. We have had occasion more than once within these years to comment on the situation editorially. As has been and is the case with most of the newer laboratory methods, experience, tempered by judgment, and sustained by an increasing accumulation of statistics, has gradually crystallized opinion as to the value of cryoscopy, until to-day its limitations are quite well understood, while its advantages are fully appreciated.

After Koranyi's historic work came that of Claude and Balthazard; of Achard and Castaigne, of Bernard, of Casper and Ritcher, of Rovsing and of Kümme!—to mention only some of the more important investigators in this interesting field. But little of importance has been published in this country on cryoscopy during the past few years, if we except the practical and thorough paper of Dr. A. A. Berg of this city.

As the subject developed under the influence of these researches, the students of cryoscopy and its clinical applications came to be divided into two camps. On the one hand there were men who, like Claude and Balthazard, believed that cryoscopy was by far the most important method of determining the renal function, and that by simple calculations it was possible to determine even the relative amounts of certain constituents from the freezing point of the urine. On the other hand, there were the skeptics, led by Røvsing, who accumulated a mass of material to prove the fallacies of the method and its utter worthlessness, save in certain limited circumstances.

The last word in the subject has, of course, not yet been spoken, nor will it be for some year to come: and yet, in the recent study of functional diagnostic methods of Kümmel (*Berliner klinische Wochenschrift*, July, 2 and 16, 1906), we find such an impressive array of facts and figures collected by that well-known surgeon in the course of six years, and based upon 404 operative cases of kidney lesions, with 1,000 or more cryoscopic examinations, that we think it worth while to present them here as probably the best solution of this important problem which has yet been offered.

Kümmel concludes from his experience that cryoscopic determinations made by beginners are worthless. It takes a great deal of experience to eliminate the source of technical error. Cryoscopy of the combined urines of both kidneys is of no practical value, as the freezing point varies so widely under normal conditions. Cryoscopy of each separate kidney is valuable, as the freezing point of the diseased kidney is constantly higher than that of the healthy one. The freezing point of the blood is constant, and therefore a much more trustworthy criterion. Normally the blood freezes at 0.56°C ., with normal variations up to 0.57° . If the freezing point is lower than that, the kidneys are not eliminating the metabolic products fast enough, and are probably diseased. If the freezing point of blood reaches -0.60°C ., nephrectomy is a risky operation, as the two kidneys combined do not excrete sufficiently well. If the freezing point is still lower, the operation is absolutely contraindicated.

Of the 404 operations by Kümmel, 189 were nephrectomies, 6 resections (partial) of renal tissue, 45 nephropexies, 11 decapsulations, 12 incisions of panapephritic abscesses, and 8 plastic operations on the ureter. The total mortality was 12.6 per cent. There was, however, a marked reduction in the mortality in the cases of operation after the introduction of cryoscopic examinations, as compared with the mortality of the preceding years. Thus, in 140 nephrectomies performed after

cryoscopic there was not a single death; on the other hand, 6 deaths due to insufficiency of renal function, or to the absence of a second kidney, were recorded among the 41 nephrectomies which were done before the introduction of cryoscopy and ureteral catheterization.

There can hardly be any question, after such convincing proofs have been submitted, that cryoscopy, especially cryoscopy of the blood and of the urine of each kidney separately obtained, is of the utmost value as a diagnostic and prognostic aid in renal surgery. By this method, combined with other modern modes of examining the condition of the kidneys, the surgeon can be very reasonably sure that the second kidney is present and that it secretes enough urine to allow the patient to survive the operation. The limitations of the method are now well defined, and if the surgeon bears them in mind, and does not rely on cryoscopy to the exclusion of other diagnostic methods, he will not be disappointed in the results of the freezing-point determinations.

P. G. WOOLLEY M.D. "The Prevalence of Intestinal Parasites in Siam." *Journal A. M. A.*, October 6th, 1906.

Dr. Woolley has examined the inmates of the government prison at Bangkok with reference to the occurrence of intestinal parasites, and found them present in 36 per cent. of the cases tested. It had been stated that amebiasis was uncommon there, but he found amebæ in the dejection of eleven out of fifty prisoners, at least three of whom were suffering from a genuine amebic dysentery. They constituted 61 per cent. of all the cases in which parasites (exclusive of monads, which were present in about 60 per cent. of all cases) were found. After amebæ, the most frequent findings were the ova of *Uncinaria americana*, *Tricocephalus dispar* and *Strongyloides intestinalis*, those of *Opisocercus sinensis*, *Ascaris lumbricoides* and *Hymenolepis nana* being present each in one case. In half the patients more than one parasite was present. The only conclusion one can draw from the figures is that intestinal parasites are common in Siam and that amebic infection is very frequent. So far as Woolley has been able to learn *Opisthorcus sinensis* has not been previously reported from Siam.

II. T. RICKETTS. "Rocky Mountain Spotted Fever." *Journal A. M. A.*, October 6th, 1906.

Dr. Ricketts, Chicago, reports that he has succeeded in alternating inoculations of monkeys and guinea-pigs in perpetuating Rocky Mountain fever, and in preserving the virus. He describes the symptoms in the animals experimented on, showing the identity as well as that of the

pathological conditions with those observed in the human species. He has also tested the infectiousness of the various organs of the bodies of the animals. The animal was bled from the carotid to deprive it of all the blood possible, and then each organ was ground with sterile sand and suspended in a physiologic salt solution. The emulsions of each were brought as nearly as possible to the same density, and 5 cubic centimetres of each were injected intraperitoneally into guinea-pigs, weighing from 350 to 550 grams. The greatest virulence seemed to be in the organs that naturally contained the most blood, such as the spleen, liver, and bone marrow. In the case of the bone marrow, however, he remarks that the difficulty of its preparation increased the chances of infection, which must be considered. The kidney, however, was quite as infectious as other organs, much richer in blood, which he suggests may be accounted for by an accumulation of micro-organisms in it by reason of its excretory function. Ricketts has not heard of any authentic example of a second attack of spotted fever in man, hence it seems probable that one attack renders the body immune. This was found by experiment to be the case in the monkey, and by reasonable analogy we may assume it to be so in man. He concludes his paper with an account of his observations of the life history of the *Dermacentor occidentalis*, which, in view of the suspicion attaching to the species as the carrier of the infection, is a matter of some importance. The observations were made under laboratory conditions, and he suggests that the various stages may not quite correspond in point of time, therefore, with those in the natural state. More complete observations will be published later.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

R. L. THOMPSON. "A Study of Epidermal Fibrils." *Jour. Exper. Med.*, 1906, viii, 467.

Thompson has made a study of the fibrils passing between the epithelial cells, in the deeper layers of the skin. These fibrils represent what are commonly termed the intercellular bridges, and they serve to bind the epithelial cells together. Thompson finds that the fibrils are present in the cell body and form a network about the nucleus. He does not venture to discuss the origin of the fibrils, but states that the strands of the different cells are united. These fibrils are increased and become more distinct in certain skin tumours. He compares them with neuroglia, connective and muscle tissue fibres.

BORRMANN. "A case of Addison's Disease following Inflammatory Conditions of the Adrenals." *Deutsch Archiv. f. Klin. Med.*, 1906. Heft. 6.

A man, æt. 31, fell from a height, hitting his left side on a box. Three ribs were broken in the fall. He was laid up more than six months, and after a year began declining. He complained of weakness, gastric crises, great loss in weight, and pigmentation of the skin and mucous membranes. Died four years after the accident. At autopsy both adrenals were found much fibrosed so that little of the original tissue remained. The sympathetic plexuses in the neighbourhood were also involved in the fibrosis. Author reports the case as the first one in which Addison's disease developed after trauma.

VERGER AND CARLES. "Addison's Disease in an Arterio-sclerotic." *Jour de Méd. de Bordeaux*, 1906, No. 7.

Authors report a case of an alcoholic in whom typical symptoms of Addison's disease developed. At autopsy a considerable arterio-sclerosis was noted. From this fact, and that, that in experimental animals arterial lesions may be produced by the administration of adremalin, the authors endeavour to connect the occurrence of the arterio-sclerosis with the Addison's. Although there were several tuberculous foci in the body the adrenals were not affected. The only change noted in the adrenals and the semi-lunar ganglia was a fibrosis.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The second regular meeting for Session 1906-07, was held in the Society's rooms, on Friday evening, October 19th.

The following candidates for temporary membership were proposed:—

Resident Staff, Western Hospital—Drs. Chandler, Reilly and Swift.

Resident Staff, Montreal General Hospital—Drs. Tees, Nelles, Lyman, Richards, White, Hillman, Lomer, Covernton, Weldon, Gillies, McDonald, Gourley, Gurd and Holden.

Resident Staff, Royal Victoria Hospital—Drs. Moffatt, Tull, McArthur, Williams, Hutchinson, Cumming, Burgess, Scrimger, Patterson, Lauchland, Muckleston, McMillan and Monahan.

Resident Staff, Montreal Maternity—Drs. Little, Hammond and Burke.

TWO CASES OF TUBAL PREGNANCY.

A. LAPHORN SMITH, M.D., presented two cases of this condition before the Society and gave a history of the cases, which will be found on page 709 of this issue of the JOURNAL.

W. W. CHIPMAN, M.D.—These cases are certainly interesting, and as has been said the condition is very much more frequently met with than one would at first suppose. The first case is especially interesting in that there were present at the same time both the tubal pregnancy and the uterine pregnancy. Some time ago I had a case in the country which I operated upon where I had this condition present, and where I thought the condition was a simultaneous one in the two positions. I removed the tube and the uterine pregnancy went on to term. I looked up the question and found it to be very rare where the two conditions were contemporaneous. In this case of Dr. Smith's I think that the uterine pregnancy was subsequent to the tubal one.

The other case is more commonly met with. As to the question of diagnosis the cases which present the most difficulty are those termed the "leaking" cases. The classic case is that of a sudden rupture and the escape of blood into the peritoneal cavity,—this we are all familiar with and such a case is comparatively easy to diagnose. The class of cases where there are repeated small hæmorrhages is the one which presents the most difficulties in diagnosis. Two months ago I had a case where a year previously the woman had a stone pass down the left ureter. It took three months to pass this stone, during which there were the usual attacks of pain.

After the stone was passed she remained well, free entirely of pain, for some six months. But suddenly one day she was seized with severe pain in the left side, of a few hours' duration only, and followed the next day by a second attack. The conclusion at first, and very naturally, was the ureteral passage of a second stone. I saw her and went very carefully over the history. She repeatedly assured me that these last attacks of pain were identical in character with those suffered previously on the passage of the stone. And yet this woman had developed a left-sided ectopic pregnancy. The attacks of pain indicated small repeated ruptures of the gestation sac with slight escape of blood. At the time of the operation I examined carefully the whole length of the left urinary conduit and could find no stone.

Here was a case extremely difficult to diagnose. The physical examination was not very satisfactory as the abdominal walls were thick and at no time had any considerable tumour developed.

As to the distension spoken of by Dr. Smith I have been struck with the sort of uniformity with which this distension occurs in cases where blood has been extravasated in any considerable quantity into the peritoneal cavity. I have no doubt even after most careful methods some blood still remains after closure of abdomen and acts as a foreign body preventing normal contraction of the intestinal wall, irritating the

intestine and so leading to a certain degree of paresis and distension, and I have also no doubt that that organism, the *streptococcus albus*, which is always present in the peritoneal cavity, has also something to do with it in setting up a low grade of peritonitis.

A. LAPHORN SMITH, M.D. I am pleased to have heard these remarks of Dr. Chipman on these cases because it is the first time my attention has been called to the fact that we may have tubal pregnancy at a much earlier date than the pregnancy in the uterus. At the miscarriage I was surprised that we did not get a foetus, although there was quite a large placental mass, but evidently it was because the uterine pregnancy was much younger than the tubal one. I have not come across this in my reading. Another interesting point was that in neither of these cases was irregular hæmorrhage present, although in the majority of cases this has been present. Many cases have been curetted on the supposition that they were miscarriages. Dr. Coe, one of the most experienced gynaecological surgeons of New York, recently reported a case of one of these cases at a private house, when the patient collapsing on the table it occurred to him, that it might be a tubal pregnancy. The ambulance was called and she was removed to a near-by hospital and an abdominal section revealed this to be the case, the abdomen being full of blood. This was one of the leaking cases.

CARDIAC THROMBI.

R. C. PATTERSON, M.D. Dr. Paterson showed specimens of three cases of cardiac thrombi which had come to post mortem at the Montreal General Hospital within the last two or three months. The first was an obliterating thrombus of the left auricle, the second a ball thrombus in the left auricle, and the third a pedunculated thrombus in the left auricle.

IRREGULAR HEART ACTION.

W. S. MORROW, M.D., read a paper upon Differentiation and Treatment of Irregular Heart Action.

DR. MORROW began by discussing the cause of the normal heart rhythm, whether it is to be sought for in nervous or muscular structures. On the whole he inclined to the latter view. He referred briefly to the various properties and peculiarities of the heart muscle and pointed out the various kinds of modifying impulses reaching the heart by the nerves. The common forms of Arrhythmia were then considered under the following heads: Respiratory, Diastolic, Auricular and Ventricular Extra-Systolic, Heart Block, Disturbances of Contracti-

lity. The essential nature of these was discussed and also the methods of differentiating them from one another by the study of the arterial and venous pulse. The bearing of the different types of arrhythmia on prognosis was referred to, and some indications were pointed out for the employment of rest, digitalis, iodides, belladonna and suprarenal extract.

J. B. McCONNELL, M.D. Very few of us can discuss this most instructive paper as it should be discussed. I think it is among the most interesting to which it has been my privilege to listen, more especially, as at the recent Toronto meeting of the British Medical Association, this subject was taken up and thrashed out in the section of Physiology and Medicine by Mackenzie, Aschoff, Broadbent, and others, not only from a physiological standpoint, but from the points of view of practical interest to the clinician. Aschoff gave a most interesting paper on the histology of the band which runs from the auricle to the ventricle and showed that modified muscular tissue is capable of conducting nerve impulses from the auricle to the ventricle. The practical part of the subject is seen in the fact that there are some kinds of arrhythmia and defective heart action which are not benefited by digitalis, and it is only (by distinguishing the variety present) by the new methods proposed that we can tell which may be benefited and which not, and when heart block is present of specific or toxic causes of degeneration in these fibres, the etiological factor must be recognized in order to get successful results in the treatment of the cases.

F. F. FINLEY, M.D. Lack of discussion is not lack of interest, and we feel that we are under a debt of gratitude to Dr. Morrow for bringing this subject before us in such a very clear fashion and it will stimulate us to higher interest in our cardiac cases.

At the close of the meeting, Dr. J. Alex Hutchison moved, seconded by Dr. F. R. England, that the President, Dr. Finley, and a committee of the older members of the Society should meet for the purpose of drawing up a letter of condolence to the family of the late Dr. Stewart.

A French authority says that there are 228,234 medical men in the world. Of these there are in Europe 162,333, distributed as follows: In England, 34,967; in Germany, 22,518; in Russia, 21,489; in France, 20,348, and in Italy, 18,245. In England the proportion of doctors is 78 to 100,000 of the population; in France it is 51, and in Turkey, 18; In Brussels it is 241; in Madrid, 209; in Budapest, 198; in Christiana, 181; in Vienna, 140; in Berlin, 132; in London, 128; in Athens, 123, and in Paris, 111.

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A STUDY OF THE ABSORPTION OF FATS IN INFANTS.

BY

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Recently the fat content of the infant's food has been attracting more attention than heretofore, and some of the questions that have arisen are:

What is the normal proportion between the intake of fat and the fat appearing in the faeces?

Is the fat appearing in the faeces fat that has escaped digestion, or is it fat formed in the intestine as a result of metabolism?

In what form do the fatty compounds exist in the faeces?

With these questions before us we undertook a series of experiments, hoping, by observing closely the intake of fat and the output in the faeces of infants, to gain some knowledge that would help us in solving these problems. The investigations extended over a period of about one year, during which time we have conducted seven experiments on infants varying from 17 days to 108 days of age.

PHYSIOLOGY OF FAT DIGESTION.

Fat has an inhibitory action upon the stomach; it remains longer in the stomach than either the proteids or carbohydrates, and the amount of gastric juice secreted is weaker and less than with a proteid diet. The gastric juice possesses a certain degree of fat-splitting power, but how much is due to the enzyme lipase and how much due to bacterial action is a question that is still under investigation.

In the duodenum, through the action of lipase which is present in the pancreatic secretion the fats are hydrolized with the formation of glycerine and the corresponding fatty acids. The oleic action dissolves the solid fatty acids like palmitic and stearic and renders them soluble in bile. They are in part converted into soaps. The soaps and fatty acids are synthesized during the process of absorption by the epithelial cells of the intestinal wall. Fat is found principally in the adipose tissue and bone marrow, but every tissue of the body contains a certain amount. The fat in the different parts of the body is not of the same composition. Muscle

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fat is not the same as the fat of subcutaneous adipose tissue. The question suggests itself, Have the various tissues of the body the power of synthesizing glycerine and fatty acids into combinations suitable for their own metabolism?

When fat is transferred from one part of the body to another it is broken up into a soluble form and conveyed by the blood. In what form it really exists is a disputed point at present. Monk has shown that 0.15 gram of sodium oleate per kilo, or less of the palmitate or stearate, are fatal to rabbits. A. S. Lovenhart questions the existence of soaps in the blood, and thinks that Hoppe Seyler's methods of extracting soaps from the blood are open to doubt. Hoppe-seyler found from 0.05 to 0.1 per cent. of soap in the blood, and, more recently, Oskar Klotz has shown soap to exist in the tissues in calcareous degeneration.

The experiments of Rachford and Pflüger show that the fatty acids are very slowly acted upon by weak alkaline solutions at 37° C., and free fatty acid has been found in the blood by several observers.

It is quite probable that, besides the neutral fat existing in the white corpuscles, small quantities of soap and fatty acid may be found in the blood stream, and are thus carried from one part of the body to another.

CHEMISTRY OF FAT.

The fats found in the adipose tissue are combinations of glycerine with fatty acids. Fatty acids form a series of acids derived from the monatomic alcohols, by oxidation. Thus, to take ordinary ethyl alcohol, C_2H_5-OH , the first stage in the oxidation is the removal of two atoms of hydrogen to form aldehyde, $CH_3C=O$; then on further oxidation these are replaced by one of oxygen to form acetic acid, CH_3COOH . A similar acid can be obtained from all the other alcohols.

Glycerine is a triatomic alcohol $C_3H_5 \begin{cases} OH \\ OH \\ OH \end{cases}$ and we may have one,

two, or three hydroxyl groups replaced by an acid radical.

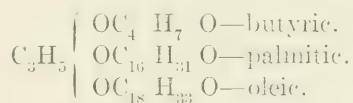
In the neutral fats we have all three replaced, so we speak of tristearin or tripalmitin, etc.

Olein is not a member of the fatty acids series proper, but belongs to a somewhat similar series of acids known as the acrylic series, of which the general formula is $C_N H_{2n-3}OOH$.

It is the eighteenth term of the series, and its formula is $C_{18}H_{33}OOH$.

Analytical results show that butter fat is essentially a mixture of various esters, those of butyric, palmitic, and oleic acids being the leading constituents.

Hehner and Mitchell obtained but very small proportions of stearic acid, and in some cases none. James Bell's experiments would indicate that several acid radicals were present in the same molecule—thus:



Glycerine may be combined with acids in the laboratory by heating them together in a sealed tube to a temperature of 240° C. for twenty-four hours. The reverse process—hydrolyzation of the glycerides—can be brought about by the action of steam at 300°C.

In the body both the union and splitting up of the glycerides, are affected by the agency of an enzyme or enzymes, which are found widely distributed in the body.

In the normal process of things, fat undergoes complete oxidation with the formation of carbon dioxide and water. Besides this oxidation process, there is a process of elimination going on. Thus, we find fat and soap in the bile, and Cyril Corlette's experiments show that fatty acids and soaps are formed in isolated portions of the small intestine of dogs. After a meal of fatty acids, Otto Frank always found in the small intestine more neutral fat than during hunger. Herman and Voit showed that this was excreted into the small intestine, not formed *in situ* from fatty acids.

CHART I.

Time of Feeding.	Amount Drawn.	Amount Fed.	Amount Sample.	Stool.	Regurgitated.	Temperature.	Weight.
	c.cm.	c.cm.	c.cm.				
4.30 p.m.	31	27.9	3.1	—	—	—	—
6.30 “	40	36.0	4.0	—	—	—	—
8.30 “	35	31.5	3.5	—	—	98.2	—
11.30 “	31	27.9	3.1	—	—	—	—
2.30 a.m.	32	28.8	3.2	—	—	—	—
5.30 “	43	38.7	4.3	—	—	—	—
8.30 “	46	41.4	4.6	—	—	98.2°	3,200
10.30 “	50	45.0	5.0	—	—	—	—
12.30 “	33	29.7	3.3	—	1 p.m.	—	—
2.30 “	32	28.8	3.2	—	—	—	—

Our first object was to establish, if possible, the normal relation between the intake and output of fat—first in the healthy suckling and second in the artificially-fed infant.

Our first experiment was conducted on a male infant 17 days old in the Montreal Maternity Hospital. Two nurses were allotted the task of watching the child night and day during the time of the experiment. They were instructed not to use soap in the cleansing of the child's buttocks, nor to employ ointments nor administer drugs. The nourishment for the baby was drawn from the mother's breast with a breast pump and placed in a graduated bottle (graduated in cubic centimetres). The nipple was fitted directly to the neck of the bottle and the infant fed with the desired quantity. The difference between the reading taken before and the reading taken after the feeding gave the exact amount of food taken by the infant. With a pipette the nurse removed a proportional amount from each feeding for analysis. The baby was fed every two hours in the daytime and every four hours at night.

All breast pumps, bottles, nipples, pipettes, and other utensils used in the collection of the milk were thoroughly washed in cold water, scrubbed with a brush, rinsed with warm water, and boiled. While not in use they were kept in a solution of boracic acid. Before being used the feeding bottle and breast pump were warmed by placing them in water at 40°C.

The faecal discharges were collected upon pieces of washed gauze (fat and soap free) about one yard square folded in the usual way. In the triangular piece, which comes up between the legs, a hole was cut to allow the penis to pass through. Over the gauze was placed a piece of gutta-percha tissue, a little larger than the piece of gauze. In this also a hole was cut for the passage of the penis. Over all was pinned the diaper. In this way the faeces were obtained uncontaminated by urine. The gauze received the faeces, the diaper the urine, and the rubber tissue between kept them separated. The baby was weighed at the same hour each morning before feeding.

With the artificially-fed children the same rules were observed, except that the food was prepared each morning by the nurse in charge according to the formula prescribed. The quantity and number of feedings in twenty-four hours were regulated according to the age of the child.

A sample of the food prepared was sent to the laboratory each day for analysis. Male children used, and the stools collected in the same manner as in the breast-fed infant.

Instead of using charcoal to colour the faeces at the beginning and end of each experiment, the fluid extract of haematoxylin was used, and found to give very satisfactory results. Five milligrammes in a drachm of water were given to the babies, and usually appeared in the faeces within eight hours after administration.

CHEMICAL METHODS.

In the examination of the food the specific gravity, reaction, total solids, fat, proteids, and carbohydrates were determined.

The Westphal balance was used to determine the specific gravity. The degree of acidity was determined by titrating with decinormal KOH, using phenolphthalein as an indicator, each $\frac{1}{10}$ c.cm. of solution used counting as one degree of acidity. The total solids were found in making the weighings necessary for the determination of the fat. In the determination of the fat Soxhlet's method, as described by Allen in his work on commercial organic analysis, was used, petroleic ether being used as the solvent.

Determination of Proteids.—For the determination of total nitrogen in milk, 5 c.cm. were measured directly into a Kjeldahl digestion flask, and the regular Gunning method employed. The total nitrogen multiplied by 6.38 gave the total proteid.

Determination of Milk Sugar.—For the determination of lactose the gravimetric Fehling's process, as modified by O'Sullivan and Defren, was used. The weight of the cupric oxide was converted into lactose equivalent by using the Defren table.

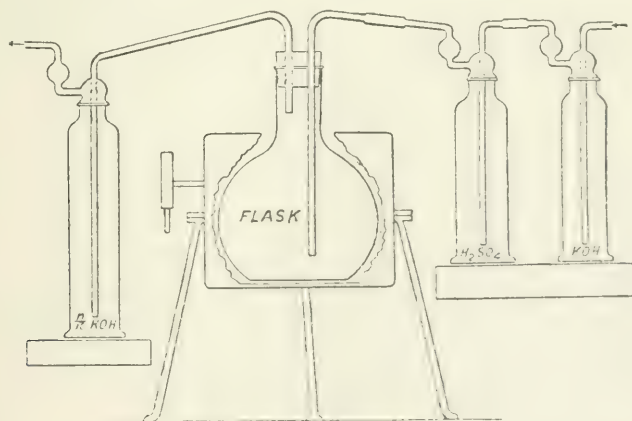


Fig. 1.

In the examination of the faeces the fats, fatty acids, and fatty acids present as soaps were determined. The reaction of the faeces and the amount of decinormal KOH neutralized by the volatile acids driven

off in the process of drying were noted. It was decided to make total quantity determinations rather than percentage determinations, as promising the most accurate results.

The gauze pads, containing the faecal discharges, were received in the laboratory by 12 o'clock each day. Each stool was folded in the gauze and covered with gutta-percha tissue. The gutta-percha tissue was removed and the gauze rolled so as to allow of its insertion into extraction thimbles made of fat-free paper. The thimbles containing the faeces for the twenty-four hours were then placed in the drying apparatus (Fig. 1) and dried for twenty-four hours or longer, if necessary, at a temperature of 95°C . The air was drawn through the flask by means of a suction pump. The air, before entering, was passed through a strong solution of potassium hydrate to remove carbon dioxide, and then through some sulphuric acid to dry it. After leaving the flask it was made to bubble through a measured quantity of decinormal potassium solution, the amount of neutralization determined by titrating with decinormal hydrochloric acid, using phenolphthalein as an indicator.

After drying, the thimbles were placed in a Soxhlet apparatus and extracted with petroleic ether for two hours, the ether siphoning every ten minutes. The ether was removed by evaporation and the fatty acids converted into soaps by treating with strong potassium hydrate. The whole was washed into a separator funnel using water and about 200 c.cm. of ether. The funnel was well shaken, and after standing for twenty-four hours the bottom layer containing the fatty acids in the form of soap was run off. The ether was washed several times with water, placed in a flask, evaporated off, and the residue dried to constant weight and weighed. This weight, minus the weight of the flask, represents the free neutral fat plus cholesterin, lecithin, etc.

The amount of non-saponifiable material was determined and deducted.

The fatty acids were set free by treating with strong hydrochloric acid placed in a separator funnel and extracted with ether, the same as in the case of the fats.

The thimbles containing the faeces, with contents remaining after the ether extraction, were acidified with hydrochloric acid and extracted with alcohol. The extract was evaporated to dryness, dissolved in ether, and washed with water several times in a separator funnel. The ether extract containing the fatty acids present as soaps was evaporated to dryness and weighed.

In this way the fats were separated from the fatty acids, the non-saponifiable material, and the fatty acids present as soaps.

The iodine numbers were obtained by Huble's method as described by Allen.

Tests of the methods described were conducted, using known quantities of fat, fatty acids, and soap, and found accurate.

Blanks were conducted with all materials used, and the ether and alcohol were redistilled before using. Experiments were conducted in duplicate when possible.

Experiment No. 1.

Male infant, 17 days old. Weight at birth, 3,125 grams; weight at the beginning of the experiment, 3,170 grams; weight at the end of experiment, 3,230 grams. This infant was fed on human milk obtained as already described. The mother was a primipara, 26 years of age. She had been detained in the hospital to have a repair of the perineum performed, and was confined to bed during the time of the experiment. The results of the analyses of the milk are shown in Table I. Chart I is a copy of the nurse's report showing the amount of milk obtained in pumping the breasts, amount fed to the infant, amount saved for analysis, temperature and weight.

In seven days the baby received 2,261 grams of milk containing 72.7 grams of fat; 2.127 grams of fat were regurgitated, leaving 70.59 grams in the stomach to be digested. During this period the infant had ten stools, containing 0.748 gram of fat, 3,123 grams of fatty acid, and 0.630 gram of fatty acid present as soaps. Volatile fatty acids given off during the process of drying the faeces neutralized on a daily average 16.8 c.cm. decinormal KOH solution.

Leaving out of consideration for the present the volatile fatty acids, and calculating the other constituents as fat, we have a total of 3.501 grams, or 4.95 per cent. of the total intake.

In Table VIII we have tabulated the percentage relation to intake of the fats, fatty acids, and fatty acids present as soaps.

Experiment No. 2.

Male infant, 85 days old, who had come to the Foundling Hospital four days before the commencement of the experiment. He was well nourished and appeared healthy. The stools contained some casein curds and were slightly alkaline in reaction. During a period of two days we observed the intake and output of fat. The infant was on a modified whey mixture, giving an analysis as follows: Fat, 2.32 per cent.: proteid, 96 per cent., sugar, 5.25: the reaction slightly acid, although supposed to have 5 per cent. of alkalinity.

The total fat in the faeces, calculated the same as in the previous experiment, was 5.4 per cent. of the fat intake, the three constituents being absorbed in about the same proportion as in Experiment 1.

Experiment No. 3.

Infant 94 days old. The fat in the food was reduced to 0.176 per cent. (Table III), or from 11 grams to 1 gram in twenty-four hours. During the two days the child consumed 2.11 grams of fat, and the total fat appearing in the faeces, amounted to 57.48 per cent. of intake. By referring to Table VIII we see that the fats contributed 13.41 per cent. of this amount, the fatty acids 1.56 per cent., and the fatty acids present as soaps 42.51 per cent.

Experiment No. 4.

Infant 107 days old. Was a test made during the resting period between Experiments 5 and 6. The fat in the food was reduced to the same amount as in the previous experiment. The proportion of fat appearing in the faeces were 5.32 per cent., fatty acids 0.43 per cent., fatty acids present as soaps 16.54 per cent., or a total fat loss, as compared with intake, of 22.3 per cent.

Experiment No. 5.

Infant 101 days old. Olive oil was added to the food in this experiment, and the total fat intake increased thereby to 7.25 grams in the two days experiment. The relative proportion of the fat in the faeces increased to 5.25 per cent., the fatty acids to 6.82 per cent., and the fatty acids present as soaps were reduced from 42.5 per cent., to 3.65 per cent. (Tables IV and V). In two days the child gained 69 grams.

Experiment No. 6.

Infant 100 days old. Palmitin was added to the olive oil and the melting point raised to 35.5° C. The total quantity of fat taken was 11 grams. The total fat in the faeces amounted to 15.38 per cent. of the intake, slightly less than in the previous experiment.

Experiments 5 and 6 were not altogether satisfactory, on account of the difficulty of obtaining a perfect emulsion of the fats, with the result that the infant was placed at a disadvantage in digesting them.

Experiment No. 7.

This infant was 22 days old and weighed 3,189 grams at the beginning of the experiment. The child was fed on a whey mixture, a daily analysis of which is shown in Table VII. During the six days of the experiment the child was given 2,637 grams of milk, containing 63.1 grams of fat; he regurgitated 1,484 grams of fat, leaving a balance of 61.56 grams to be digested. In the six days the infant passed 21 green-

ish-yellow stools, the first 12 of which were alkaline in reaction, the remainder acid. The faeces contained 2.062 grams of fat, 14.496 grams of fatty acid, and 5.161 grams fatty acid present as soap (Table VII). The percentage relation to the intake of fat is shown in Table VIII. The infant gained 113 grams in the first five days of the experiment. One week after the conclusion of the experiment the child lost weight rapidly and died three weeks later.

Dr. McCrae's *post-mortem* report showed a hæmorrhage into the right ventricle, probably there from birth; acute left purulent otitis media, and fatty infiltration of the liver.

The interesting points in this experiment are that most of the fat was split up and appeared in the faeces as fatty acids and soaps, and while other clinical signs were favourable, the analysis of the faeces showed that the infant was losing by the bowel about 35 per cent. of the fat intake.

SUMMARY.

The stools of a normal breast-fed infant are acid to litmus. This acidity is due principally to the presence of volatile fatty acids. In Experiments 1 and 7, when the stools were strongly acid, the buttocks did not become excoriated. During Experiments 3 and 4 the stools were alkaline to litmus, and this was accompanied by excoriation of the buttocks. That the volatile fatty acids in the faeces are not dependent upon any one constituent of the food is evidenced by the irregularity in the quantity found during the experiments.

In the normal infant the amount of neutral fat in the faeces is very small—0.107 grams a day in the breast-fed infant and 0.179 gram in the bottle-fed infant. Most of this is fat that has escaped the action of the fat-splitting enzymes by being entangled in proteid curds—so-called fat curds on analysis were found to contain only 20 per cent. of fat.

In Experiment No. 1 the iodine number for the fat in the faeces was 67, or slightly above the iodine number for the fat of human milk. In Experiment No. 7 the number was 41, about the average of butter fat. In Experiments 3 and 4 the number rose to 62, indicating a change in the character of the fat excreted when the infant was on a low fat diet. In Experiments 5 and 6 the iodine number was 75, which would be accounted for by the increase of olein in the food.

The free fatty acids exceeded the amount of fat found in the faeces in every experiment where the fat in the food was over 0.5 per cent. Free fatty acids were found in alkaline stools in Experiments 2, 3, 4, and 6, confirming Pflüger's experiments that free fatty acids combine very slowly at 37° C. with weak alkalies. The fatty acids present as

TABLE I.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-surgated Matter.	Fat Retained by Stomach.	No. of Stools.	Pectin Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
1	338	6.72	—	3.112	10.53	0.330	10.20	1	—	0.106	0.095	0.025	3.170	—
2	279	7.00	—	2.765	7.71	0.120	7.59	1	—	0.124	0.103	0.186	3.199	20
3	290	6.89	—	3.475	10.07	0.948	9.13	2	15.5	0.103	0.389	0.133	3.185	5
4	301	6.92	—	3.324	9.99	—	9.99	0	—	—	—	—	3.170	15
5	311	6.71	—	3.281	11.20	0.278	10.93	2	16.3	0.109	0.654	0.054	3.170	—
6	335	6.81	—	3.274	11.97	0.380	11.59	3	17.8	0.193	0.491	0.137	3.160	10
7	344	6.50	—	3.262	11.23	0.071	11.16	1	17.7	0.110	0.391	0.095	3.230	70
	2,261	—	—	—	72.70	2.127	70.59	—	—	0.718	2.125	0.630	—	60

TABLE II.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-surgated Matter.	Fat Retained by Stomach.	No. of Stools.	Pectin Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
1	556	—	—	—	12.89	0.0	12.89	2	—	0.230	0.228	—	—	—
2	476	5.25	0.967	2.32	11.01	0.0	11.01	4	6.9	0.129	0.383	3.23	5.414	-113
	1,032	—	—	—	23.93	—	23.93	—	—	0.359	0.611	3.23	—	—

TABLE III.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-gurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	(Gain or Loss.
1	603	4.26	0.893	0.176	1.06	0.0	1.06	4	10.2 c.cm.	0.129	0.013	0.411	5.443	+ 29
2	599	4.49	0.911	0.176	1.05	0.0	1.05	6	15.1	0.154	0.020	0.486	5.216	- 227
	1,202	—	—	—	2.11	—	2.11	10	—	0.283	0.033	0.897	—	- 198

TABLE IV.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-gurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	(Gain or Loss.
721	721	7.33	0.928	0.193	1.39	0.0	1.39	5	6.63 c.cm. 10.7	0.074	0.006	0.230	5.128	—

TABLE V.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-gurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Dechlorinated KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
1	717	7.75	0.946	0.525	3.76	0.0	3.76	3	ccm. 11.1	0.055	0.018	0.127	5,059	—
2	705	8.29	0.911	0.496	3.49	0.0	3.49	4	27.8	0.247	0.408	0.042	5,302	143
	—	—	—	—	—	—	—	3	—	0.079	0.069	0.096	5,128	-74
	1,422	—	—	—	7.25	—	7.25	10	—	0.381	0.495	0.265	—	—

TABLE VI.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Re-gurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Dechlorinated KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
10	716	6.74	0.839	0.516	3.70	—	3.70	5	ccm. 13.3	0.100	0.331	0.251	5,100	-28
11	718	6.68	0.839	1.020	7.30	—	7.30	4	14.2	0.323	0.411	0.267	5,086	-11
—	1,432	—	—	—	11.00	—	11.00	—	27.5	0.429	0.745	0.518	—	-42

TABLE VII.

Number.	Food.	Percentage of Sugar in Food.	Percentage of Protein in Food.	Percentage of Fat in Food.	Fat in Food.	Fat in Regurgitated Matter.	Fat Retained by Stomach.	No. of Stools.	Decinormal KOH Neutral in Drying.	Total Fat in Faeces.	Total Fatty Acids in Faeces.	Fatty Acid as Soap.	Weight of Infant.	Gain or Loss.
1	320	6.85	1.14	1.97	6.30	0.047	6.25	3	0.0	0.113	0.432	0.278	3,203	+14
2	502	6.25	—	2.36	11.84	0.195	11.64	2	2.5	0.015	0.057	0.228	3,231	+28
3	445	7.29	1.29	2.10	9.34	0.700	8.64	2	0.0	0.447	2.956	1.395	3,260	+29
4	463	5.37	—	2.09	9.67	0.172	9.50	2	9.7	0.165	0.315	0.789	3,288	+28
5	473	7.93	—	2.85	13.48	0.000	13.48	4	37.4	0.496	4.041	1.570	3,302	+14
6	444	5.99	1.21	2.81	12.47	0.410	12.06	5	35.9	0.577	4.789	0.867	3,302	—
—	—	—	—	—	—	—	—	3	20.4	0.249	1.906	0.034	—	—
—	2,637	—	—	—	63.10	1.524	61.57	21	—	2.062	14.496	5.161	—	113

soaps averaged 0.07 gram in the breast-fed infant and 0.161 gram in the normal infant on artificial food.

In Experiments 3 and 4, when the fat was reduced to 0.176 per cent., the soaps increased (for Experiment 3) to 0.448 gram, (for Experiment 4) to 0.230 gram, Halliburton, Gamgee, and others found the calcium and magnesium soaps in excess of the soluble soaps in the faeces; and Uffelman found more calcium in the faeces of artificially-fed infants with diarrhoea than in healthy sucklings.

From our experiments we see that the soaps are increased in the faeces in artificially-fed infants, and in infants with a low percentage of fat in the food (Tables III and IV), and in infants with diarrhoea (Table VII).

Have we not grounds for believing, therefore, that the loss of calcium, in combination with the fatty acids as soaps, would be increased under these conditions?

TABLE VIII.—*Percentage Relation to Intake.*

Experiment.	I.	II.	III.	IV.	V.	VI.	VII.
Total intake of fat.....	70.59	23.93	2.11	1.33	7.25	11.00	61.57
Percentage of fat in faeces	1.06	1.50	13.41	5.32	5.25	3.90	3.34
Percentage of fatty acid in faeces	3.00	2.55	1.56	0.43	6.82	6.77	23.54
Percentage of fatty acid as soap in faeces	0.80	1.35	12.51	16.54	3.65	4.70	10.00
Total fats	4.95	5.43	57.48	22.30	15.73	15.38	36.88

Proprietary foods with very low fat percentages are acknowledged as one of the etiological factors in the production of rickets.

Pflüger found in his experiments on the solubility of fatty acids that the solid fatty acids, palmitic and stearic, were much more readily saponified if dissolved in oleic acid. And although these acids were saponified readily oleic was only acted upon to a very slight extent.

We determined the iodine numbers for the free fatty acids and for the fatty acids combined as soaps. The iodine number for the free fatty acids was 77 to 79, for fatty acids combined as soaps 51 to 62, showing that the fatty acids combined as soaps contained less oleic acid than the free fatty acids.

In Experiment 7, with pathological conditions present, the iodine number for the fatty acids combined as soaps was 84, the free fatty acids 37. Here the conditions were apparently reversed.

Conclusions: About 4 per cent. in nurslings and 5 per cent. in bottle-fed infants of the fat ingested appears in the fæces.

The fat found in the fæces is, to a great extent, fat that has escaped digestion.

The fatty compounds in the fæces exists as neutral fat, fatty acids, and soaps. The fatty acids are usually in excess of the other two constituents.

The soaps are relatively increased in artificially-fed infants, in infants with a low percentage of fat in the food, and in infants with diarrhoea.

In conclusion we wish to thank Professor R. F. Ruttan for the use of his private laboratory, Dr. J. R. Roebuck for his kind assistance, and Drs. Blackader, J. C. Cameron, and Evans for the use of the material in the hospitals.

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TETANUS FOLLOWING VACCINATION.

BY

F. R. ENGLAND, M.D.
Montreal.

M. F., aged 5 years was vaccinated on 7th of September 1906 with surgical precautions. The abrasion made on the arm was covered with a piece of sterile gauze held in place by narrow strips of zinc-oxide adhesive plaster; the gauze was removed in seven or eight days by the mother, after which the arm received the ordinary care and protection. All went well until September 26th, nineteen days after vaccination, when the child passed a wakeful night, had difficulty in opening the mouth, and in swallowing. Several times during the night he had had peculiar attacks. He was said to have cried and to have straightened out, the body and limbs becoming rigid.

Read before the Montreal Medico-Chirurgical Society, November 2nd, 1906.

I was called to see the patient at 2.30 P.M., September 27th, shortly after one of these convulsive seizures. He was resting quietly in his mother's arms, the pulse slightly quickened, the temperature normal. The muscles of the extremities, body and neck were somewhat rigid, and apparently both sides of the body were equally involved. He cried on any attempt being made to move him, or to bend his arms or legs. He could protrude the tongue only partially, and with difficulty, from inability to open the jaws; there was also some difficulty in swallowing.

When he was placed upon the floor he was able to walk, but in a stiff and jerky manner; the head and neck and trunk were held decidedly fixed, and he did not appear to have proper control over his limbs. The vaccination ulcer on the left arm was a round, punched-out sore, extending through the entire thickness of the true skin, and in size rather larger than a sixpence; its base was covered with a sero-purulent secretion and there was swelling, redness and induration of the surrounding skin. It was not in any way an unusual or an unhealthy looking vaccination sore. Scattered generally over the body, particularly over the legs and arms, numerous blotches and scratches were to be seen, evidently a traumatic rash, said to be due to mosquito bites and to scratching.

September 28th, 9.30 A.M. Dr. Archibald kindly saw the case in consultation. The patient had had a bad night; all the symptoms observed yesterday, the trismus, the dysphagia and the general muscular rigidity were now more marked, and during the night the patient had had several general convulsions, when the limbs were forcibly extended in tonic muscular spasm, and the body held in opisthotonos. The case was now considered to be clearly one of tetanus, and the child was removed to the Western Hospital for surgical treatment.

Dr. W. F. Hamilton saw the case in the afternoon in consultation, and concurred in the diagnosis. At 4.30 P.M. under general anaesthesia the ulcer was excised by an elliptical incision carried down to the fascia muscle; ten c.c. of anti-tetanic serum was injected into the surrounding tissues, and the wound was closed by interrupted sutures. The brachial plexus on the left side was then exposed and a drachm and a half of anti-tetanic serum was injected into the three cords of the plexus, enough to swell the nerves to three times their natural size. Four cc. of serum was also injected between the second and third lumbar vertebrae into the spinal cord or subarachnoid space. The needle was moved about in the spinal canal with the view of injuring the cord, but failed to cause any twitching of the legs. Five c.c. of serum was also given subcutaneously. The patient left the operating room in

good condition and came out of the anaesthetic quietly. At 8 P.M. pulse was 120, temperature 100° F. patient resting comfortably and taking liquids (milk and water), though at times there is some difficulty in swallowing.

September 29th, 4 A.M.—Pulse 120, temperature $100\frac{1}{2}^{\circ}$ F.

5 A.M.—slight convulsion.

8 A.M.—pulse 132, temperature $105\frac{1}{2}^{\circ}$ F. perspiring very freely, mouth twitching, swallowing improved. Chloral hydrate and potassium bromide of each $2\frac{1}{2}$ grs. given.

10 A.M.—Patient does not seem so well. The face has an anxious expression, the legs are extended and stiff, the left being more rigid than the right, the arms are flaccid; the neck is stiff and the head retracted, in which he complains of recurrent spasmodic pains; the mouth and facial muscles twitch (*risus sardonius*), the body is seen to jerk every few minutes, accompanied by short moans caused by recurring pain referred to the epigastric region.

11.30 A.M.—Slight convulsions lasting about a minute.

Termination at 6 P.M. a severe general convulsion occurred involving the whole muscular system. The legs became perfectly rigid and the arms also but to a less degree; the breathing became rapid, cyanosis soon supervened and finally respiration failed. The heart continued to beat after the respiration had ceased.

Remarks:—This case seemed a favourable one for surgical treatment. It came to operation less than 48 hours after the onset of symptoms; the temperature before the operation was low, not above 100° F. and the child's general condition was good. The treatment was certainly radical; the result disappointing and discouraging. Whether the treatment had any beneficial affect in lessening the severity of the spasms it is difficult to say. It was thought that swallowing was easier, and the trismus less marked. It is perhaps to be regretted that a full dose of the serum was not given subcutaneously at the earliest possible moment, that is, 24 hours before the operation.

The time has come when vaccination can no longer be considered a simple matter, a slight operation, which any one may perform, and requires no special treatment. I hope there may be some discussion on the subject of vaccination and especially on the proper method of treating the ulcer or so-called pock. So far as I know there has been up to the present time no recognised or uniform method of treatment in these cases. They are generally left untreated or to receive such treatment as may seem good to the patient. In view of the bacteriological report it is impossible to say definitely how the tetanus toxine gained

entrance into the system, whether through the vaccination sore or some other focus, such as one or more of the numerous cutaneous abrasions.

I wish to express my indebtedness to Dr. Archibald for his assistance at the operation, and to Dr. Keenan, and to the Resident Hospital Staff for their attention to the patient, while he was in the Hospital, and for notes of the case.

With regard to the purity of the vaccine, Dr. Keenan made a very thorough bacteriological examination of several tubes of vaccine taken from the same lot of lymph as that used to vaccinate this child, with a negative result. He also examined the excised ulcer, and made several inoculation experiments; but again failed to find either the toxine or the bacillus of tetanus. It is impossible, therefore, to say that this particular case of tetanus occurred as a result of vaccination.

The numerous abrasions scattered widely over the child's body, caused by mosquito bites and subsequent scratching, were quite sufficient to have been the infecting focus in this case.

The case, however, teaches the importance of vaccination, and the care which should always be taken in the after treatment to guard against infection. Dr. Evans's practice of protecting the arm by sewing a piece of sterile gauze inside the sleeve, and bathing the arm daily with alcohol has much to recommend it, and I have practically followed this plan for years, and have never allowed my patients to wear patent shields as protectors.

In cases where secondary infection has occurred, and as a result a foul ulcer exists, it should be treated on general surgical principles, to obtain an aseptic sore as soon as possible.

(In reply to Dr. Garrow's question): The wound was sutured after the ulcer was excised; the bronchial plexus was left exposed with sutures surrounding the three cords to facilitate the further injection of serum, if it were thought necessary. After the operation the child showed some signs of improvement, but within twenty-four hours a severe convulsion occurred from which he died before a second injection could be given.

In Dr. Archibald's excellent paper on tetanus, read last year before this Society, it was shown that the toxine of tetanus gained entrance to the spinal cord and medulla through absorption by the axis cylinders of the nerves, and not through the general circulation. It was his paper which determined me to carry out the operative treatment therein advised.

Dr. Horatio C. Wood has resigned the chair of materia medica, pharmacy, and general therapeutics in the University of Pennsylvania on account of ill health, and has been elected emeritus professor.

TETANUS FOLLOWED BY RECOVERY.

BY

ALISON CUMMING, M.D.

Royal Victoria Hospital, Montreal.

The following case report is submitted as a contribution to the literature on the treatment of Tetanus by the intra-neural and intra-mural injections of Anti-toxine.

C. S. aged 5, on July 18th, 1906 fell on a sharpened stick with bark on it, which lay on the ground. The stick entered his left thigh on the inner side $2\frac{1}{2}$ inches above the knee. It ran up the thigh 5 inches, as was afterwards observed on examination, superficial to the muscles, and then penetrated the muscle to the region of the femoral vessels. In the evening the wound was opened for a short distance and washed with saline and hydrogen peroxide. Some bark; a little earth, and a piece of cloth were removed from it. It was afterwards packed with iodoform gauze, and dressed with a dry dressing.

On July 21st, 3rd day, the patient was seen again. His leg was sore and swollen and his temperature 100° . The packing was removed; no pus was found; hot fomentations were applied.

On July 22nd, 5th day, there was a trace of pus in the wound. Temperature was normal.

On July 25th, 8th day, the patient felt better, and tried to get up; but he noticed that his left leg jerked upwards and became flexed on his abdomen. This movement was accompanied by considerable pain.

Next day the family physician saw him again. When touched, the muscles of the patient's leg became rigid. This was accompanied by spasm of the lumbar muscles as well. He was taken immediately to the hospital and while on the train the spasms became frequent and more severe.

Examination in Hospital July 27, 1906, 9.15 P.M., 9th day of disease.

Child was lying on his right side. Head markedly drawn back—back—in the opisthotonos position. Left thigh flexed on abdomen, and leg slightly flexed at the knee. The spasms were frequent, and occurred on slight excitation such as a mere touch. At the onset of each spasm he assumed an expression of anxiety and distress accompanied by a cry of pain. The effect was most marked on the left lower extremity; but the muscles of the other limbs, the back and neck and occasionally the recti abdominalis also participated in the spasm. The erectors spinæ were especially rigid. The masseters were involved slightly. He could open his mouth to such an extent that the index

finger could be inserted between his teeth. The spasms came on at one to two minute intervals, and lasted about 30 seconds. Temperature $100\frac{1}{2}$, Pulse 138, Respirations 28.

Operation— The same night the wound was opened in its whole extent, an incision about 8 inches long being made. The walls were dirty and contained a few drops of pus and a number of small pieces of bark. The walls were excised with a knife. The anterior crural nerve was then exposed, and injected with a hypodermic syringe full of anti-tetanic serum: and the balance of the 10cc. was injected into the soft tissues in the upper part of the leg wound. The great sciatic nerve was then exposed, and treated similarly. Five cc. of the serum was then injected into the spinal canal between the 1st and 2nd lumbar vertebrae, an effort being made to injure the cauda equina by working the needle about. No twitching of the legs was noticed. The remaining 5 cc. was injected into the soft tissues of the loin.

After operation— Up to 7 A.M. on the day following operation the spasms were very severe, occurring about every seven to ten minutes and lasting on an average half a minute. They were of the same character as those noted before operation, except that they were more severe, and were accompanied by more rigidity and pain. Between 7 and 10.30, A.M. July 28th, the spasms became less frequent and less violent, and were confined mainly to the extensor muscles of the injured leg, the flexor nature of the spasm observed at first having given place to complete extensor spasm of the whole leg.

At 10.30 A.M. under an anæsthetic half a drachm of anti-tetanic serum was injected into the spinal canal between the 1st and 2nd lumbar vertebrae: and a corresponding quantity subcutaneously. The subcutaneous injection was repeated at 5.30 P.M.

During the evening the patient was very restless and was subjected to attacks of spasm of the muscles of the neck, back and extremities. These came on about every 20 or 30 minutes but were not so violent or painful as before. He lay by preference on his abdomen in order to allow for the hyperextension of the thigh on the pelvis; and when a spasm was on, his limbs were held straight and rigid, only the dorsum of his feet and his thorax touching the bed.

At 11.15 the same night an anæsthetic was again administered and the same treatment was carried out. On this occasion the intra spinal injection was made between the 11th and 12th dorsal vertebrae, and on moving the needle about within the canal, definite twitchings of the legs were observed.

On the following day, July 29th, this was repeated. After this his condition improved somewhat and for the two succeeding days he re-

mained about the same. He lay in a half opisthotonos position, while the rigidity of his back and neck muscles was easily overcome. On each of these days he had subcutaneous injections of the serum. His temperature during this time varied between 102° to $103\frac{2}{5}$.

On August 3rd, in addition to the intra-neural intra-spinal injections the local wound was opened up and a small sinus was found running down between the artery and vein from which some small pieces of bark were removed.

From this time on he improved gradually, and on August 5th, 9 days after admission, his temperature was normal; and while his head was drawn slightly backwards and his back somewhat arched there was no evidence of marked rigidity or painful spasm.

The gradual improvement continued and on August 11th, when he left the hospital, fifteen days after admission, his muscles had regained their normal tone with the exception of his left leg which was still somewhat stiff and in a condition of tonic extensor spasm, and caused him considerable pain when actually flexed.

The tetanus bacillus was found in the tissue removed from the wound at the time of operation.

The case was thought by those who saw it to be one that would have gone to a fatal termination, if it had not been treated; because: there was a comparatively short incubation period. The symptoms appeared on the 8th day. 2. The temperature during the nine days before admission was comparatively high $99\frac{2}{5}$ to 103.3 . The spasms, though local at first soon became wide spread, involving the muscles mentioned. 4. The spasms were severe and frequent.

It seems reasonable to conclude that the results obtained were due to the treatment employed, because for the two days succeeding the commencement of treatment the symptoms remained stationary; and on the succeeding days the patient gradually improved.

The above notes are given through the kindness of Dr. Archibald under whose service the case was observed.

TETANUS FOLLOWED BY DEATH.

BY

A. E. GARROW M.D.
Montreal.

Since Dr. Archibald reviewed the literature of tetanus in this Society a year ago I have had to treat a case of acute tetanus. The patient, a girl nine years old, was sent to the Royal Victoria Hospital by Dr. W. Grant Stewart, to whom I am indebted for the accompanying notes.

On October 30th, 1905, the patient had her left shin bruised, and lacerated, by a cart wheel, while riding on the end of the vehicle. Dr. Stewart thoroughly cleansed the wound, and injected 5 c.c. anti-tetanic serum into and about the injury, and continued to dress it for two weeks during which time she remained in bed. The patient was then allowed to get up with what appeared to be a healthy granulating wound, and the parents continued the treatment themselves.

All apparently went well until Wednesday, December 13th, when she complained of weakness in her legs, a pain in the back, and a "sore" tongue. These symptoms persisted on Thursday, and that night her parents noticed that she was very restless in her sleep, although the following day she was unusually quiet. That afternoon she fell down-shairs slightly injuring her head, and in the evening she staggered, and fell, several times on attempting to walk.

Dr. Stewart, who had not seen her for some days was again called on Saturday, and found a spastic condition of the lower limbs, retraction of the head, and stiffness in the back. In the afternoon she complained of pain, and stiffness, in the lower jaw. On Saturday night she wakened frequently with a start, and a cry, passing at once into a spasm with retracted head, arched back, and extended limbs.

She was admitted to the Royal Victoria Hospital on Sunday, December 17th, 48 days after the injury, and four days after the onset of general symptoms. The patient's face was flushed. There was retraction of the head; slight arching of the back; the legs and feet were extended, and more or less rigid. The jaws could be opened slightly with much difficulty; the tongue was coated, and the pupils dilated; the pulse 150, and weak.

From time to time she was thrown into general spasm, when she became cyanosed, and had difficulty in respiration. No urine had been passed for 36 hours, and a catheter withdrew but a small quantity of apparently normal urine.

The patient was anaesthetized with chloroform; the granulating, and slightly necrotic, tissue was freely excised. About 10 c.c. of serum was injected into and subcutaneously about this area; the surface was swabbed with a solution of iodine, and a moist antiseptic dressing was applied. The anterior crural, and sciatic, nerves were exposed and injected with from 7 to 8 c.c. of serum; the obturator was not exposed. The spinal canal was then tapped between the third and fourth lumbar vertebræ, about 7 c.c. of cerebro-spinal fluid was withdrawn, and a similar quantity of serum was injected. No twitching of the legs occurred during this proceeding, although the needle was moved about freely.

The patient recovered quickly from the anæsthetic, but the spasms returned, and recurred with increasing frequency, and were of longer duration. Chloral and bromide in solution were administered per rectum, but were promptly expelled. Twenty ounces of normal saline solution were given intravenously, but had only a temporary effect on the rapid and weak pulse. The patient succumbed from exhaustion within ten hours of the operation; the rectal temperature just before death was 107°F.

This case is of especial interest on account of the apparently long incubation period. Did the initial dose of antitoxine serum inhibit temporarily the growth of the organism inoculated 48 days before? There is no reason to believe that the wound was infected subsequent to the growth of granulation tissue. A long incubation period does not necessarily imply a subacute or mild form of tetanus.

Dr. Keenan found the tetanus bacillus in the necrotic tissue excised from the shin, but failed to produce tetanus in a guineapig which was injected with the cerebro-spinal fluid withdrawn by lumbar puncture.

PUBIOTOMY: CASE REPORT.

BY

DAVID JAMES EVANS, M.D.

Assistant Obstetric Physician Montreal Maternity Hospital.

E. M., aged 24, III—para, was admitted to the Montreal Maternity, September 8th, 1906. Her two previous pregnancies had been terminated at term by craniotomy. The last had taken place a year ago. This was followed by prolonged sepsis, and she was admitted to the General Hospital where she spent nearly a year. There she underwent an abdominal operation, one tube being removed.

The last menstrual period began January 1st, 1906. Patient first noticed foetal movements in May, 1906. There had been persistent nausea and vomiting throughout the pregnancy, and moderate severe frontal headaches. There had been oedema noticed at times, but no disturbance of vision. The bowels had moved regularly with cathartics. The patient stated that she had learned to walk at twenty-four months of age, and that she was married in 1903. Her previous pregnancies had gone to term the children being lost as above stated. There was no history of any previous disease. The kidneys were normal.

On examination the fundus uteri was found to be two finger-breadths below the ensiform cartilage. The abdomen was in the condition of a full term pregnancy. There was a scar of an incision in the middle

line half way between the symphysis and the umbilicus. The child was presenting in R.S.A., the presenting part being well above the brim. The foetal heart was heard from 144 to 156 on the right flank at the level of the umbilicus.

The pelvic measurements were Sp. 26.5 c.m.; Cr. 28 c.m.; Troch. 32. c.m.; Conj. Diag. 9 c.m.; the true conjugate was estimated at 8.5 c.m. The public arch was very wide, and the transverse diameter of the outlet was 12.75 c.m. A diagnosis of flat rachitic pelvis was made.

She had been seen in the Out-Door Department on August 29, 1906, and her measurements having been taken at that time, she was advised to come into the Hospital when the pains began, and it was the intention, if the condition warranted it, to deliver her by means of abdominal Caesarean section. In accordance with this plan she was put to bed when admitted, as she was having irregular abdominal pains, and small doses of morphia were given to secure rest.

On the night of September 10th, patient began to have frequent and severe pains. My attention was called to her on the morning of September 11th, when I had her removed to the labour room and prepared for examination. The position of the foetus was found unchanged by external examination, the foetal heart being heard in the same position, and at the same rapidity. On vaginal examination the parts were found relaxed. The vagina was short and there was nothing unusual about the vaginal discharge. The sacral cavity was markedly accentuated from above downwards, and decreased laterally. The promontory could easily be reached by the finger. The os was found three-quarters dilated, and the left hand of the foetus prolapsed into the vagina. The foetal breech was felt above the internal os in R.S.A. position.

No record could be obtained as to when the membranes had ruptured. Under the circumstances I decided that to deliver the patient by the abdominal route would necessitate a Porro operation, so I decided to attempt delivery by means of pubiotomy.

The patient having been prepared for operation in the usual method, she was catheterized in the dorsal position, and the catheter was allowed to remain in the urethra as a guide. A short incision was made parallel to the upper border of the left ramus of the pubes, down to the bone. The finger was inserted behind the symphysis stripping off the bladder, and a Bumm-Stockel needle was then passed carefully down behind the symphysis, guided by the internal finger, and brought out midway on the left labium majus. A Gigli saw was then attached to the needle and drawn back through the wound. The bone was sawn through exceedingly easily, but it did not separate with any sudden snap. Just

as the bone had been sawn through there was a gush of blood which was readily checked by pressure from gauze packed into the wound and over the pubes. The legs were now flexed and held in position by assistants.

Dr. Little who was assisting me undertook the delivery. The right foot of the child was seized and brought down, and the body as far as the umbilicus delivered without difficulty. The right arm was found to be displaced upwards, and around the child's neck, and it was removed without much difficulty, but the child could not be turned to allow the biparietal diameter to come down on the left side, as is directed in such cases. Some considerable force was necessary to bring the head down into the pelvis: as it passed the brim the pelvic bones separated to the extent of 2 c.m.

The child was deeply asphyxiated on delivery, but was resuscitated with hot and cold baths and insufflation. After the birth of the placenta which was expressed without difficulty the patient was examined internally. A deep tear was found extending high up into the uterine segment on the left side, as it did not bleed it was decided not to suture. The skin incision was then closed with four silk-worm sutures, the lower wound being covered with iodoform collodion. The pelvis was surrounded by a broad strip of adhesive plaster, and sand bags applied along either side. A small band was placed about the knees of the patient to keep them together. After operation the patient's pulse was very weak but soon after being put to bed it became about 116 per minute. She was given a saline solution of 700 c.c.

About three-quarters of an hour afterwards the patient showed evidence of collapse, the lips and finger nails becoming deeply cyanosed. There was no definite sign of hæmorrhage, nor was there marked abdominal tenderness, though the pulse rose to 144 per minute. Under prompt treatment she rallied.

The child was a male and weighed 2600 grammes. The Bi. P. diameter was 8.75 c.m.; Bi. T. 8 c.m.; O. M. and the O. F. 11.5 c.m. The further history of the child was uneventful. It weighed when it left the Hospital 2670 grammes. The mother was unable to nurse the child, and it was fed on a cream and whey preparation.

The recovery of the patient was on the whole uneventful. The highest temperature recorded was 101.5 which was reached on the 5th day. As a rule the temperature remained below 100. The patient required to be catheterized but twice, when she regained complete control of the bladder. She complained of considerable pain over the right sacro-iliac-synchondrosis throughout.

The incision was dressed on the 6th day and every thing was found in good condition. There was marked swelling and induration of the left labium. On the 11th day dressings were removed, the wound was dressed and the sutures removed. A quantity of peculiar blood stained fluid escaped from the outer edge of the wound at this time, and more could be expressed by pressure. This sinus was somewhat enlarged by a probe, a sterile gauze drain was inserted, and the wound was dressed every day or two until this discharge ceased.

The patient was a very sensitive and rather complaining type of woman, and very apprehensive about beginning movements of her limbs. She sat up for the first time on the 30th day and was discharged on the 47th day. She was detained longer than necessary in the Hospital in order to permit of certain examinations being made. On discharge the pelvic examination showed the cervix lacerated on the left side. The uterus was well involuted, not tender, and in good position. The adnexa were free. The Diag. Conj. twice measured 9.25 c.m. showing a slight permanent increase. The left ramus of the pubes was markedly thickened in its entire extent, but there was no definite callous noticed at the line of division. The genitalia were practically in the same condition as when the patient was admitted. The patient could stand on either leg without difficulty, and there was no evidence of undue movement in the pelvis.

This operation was first suggested by Gigli, in 1894, his object being to retain all the advantages, and do away with some of the dangerous features of the operation of symphysiotomy. He proposed that the pubic bone should be sawn through to one side of the symphysis by means of a fine wire saw which he had designed for the purpose, since known as the Gigli saw. The operation was first performed by Bonardi of Lugano, in May 1897. The operation was first introduced into Germany by Doederlein in 1904, who largely improved the technique. Since then the operation has been done in practically all the German Clinics, and in France. The operation has been steadily growing in favour and the results have on the whole been very satisfactory. It has been performed many times in the United States, and once in Canada by Laurendeau of St. Gabriel de Brandon, who reports a case in *La Union Medicale du Canada*. Jan. 1906.

As has been suggested by Gigli the operation consists in making a large vertical incision to one side of the symphysis pubis, and then sawing through the bone from the outside. Doederlein's modification has made the operation practically a subcutaneous one. The operation performed in the case here reported is practically that of Doederlein.

Bill in a recent paper on this subject to which I am much indebted claims the following advantages of the operation over Cesarean section:

(1) The fact that the peritoneal cavity is not opened, and that the field of operation does not connect with the generative tract, allows of its being done in cases in which there is infection already present, or where there is a suspicion of infection on account of examination under doubtful asepsis.

(2) The greater simplicity allows of its being done in a private house, and the fact that it may be done subcutaneously greatly lessens the danger of infection.

(3) The operation includes nothing which might interfere with future labours. The uterine wall is not incised, and this decreases the danger of weakening it.

The complications which attend the operation are according to reports hitherto published, hematomata of the labia, and at the site of the operation; lacerations of the bladder and of the vagina wall, which in some cases connect with the field of operation; and thrombosis of the veins of the leg.

Bill has been able to collect records of 157 cases in which the operation has been performed, with eight deaths. There is no doubt that many other operations have been performed which have not been recorded. In but one of these fatal cases could the death be said to have resulted from the operation, and the cause of death in this was thrombosis and embolism. Several of the other cases died of sepsis, but in each one of them sepsis was present at the time of operation. One case died of chloroform during the operation, and another of typhoid fever twenty-five days after operation. The results for the child have not been so uniformly good as for the mother, but on the whole could be said to be very satisfactory.

The increase in the true conjugate which may be obtained, depends upon the degree of separation of the cut ends of the bone. A separation of 6 c.m. between the cut ends of the bones will give an increase in the true conjugate of 2 c.m. This degree of separation of the cut ends of the bones has as yet not been recorded. The maximum of separation Doederlein records is 5 c.m., which was not attended with any injury to the soft parts. The operation is limited in flat rachitic pelvis to 7 c.m. C. V. and in general contraction to $7\frac{1}{2}$ c.m. C.V.

The enlargement as a result of the operation is an asymmetrical one. The pelvic diameter on the side opposite to the incision is as a rule most markedly increased.

Bills reports having been unable to record a single case where the bony surfaces did not unite after the operation; as a rule there is no mobil-

ity and in no case is there any record of the patient being affected as a result of the operation. Some observers have reported the presence of callous in considerable quantity after the operation. Van des Vale and Kannegiesser have reported cases in which pubiotomy had been performed, and at a subsequent labour there had been spontaneous delivery, the enlargement of the pelvis evidently being permanent.

My own opinion is that the operation has a distinct, though limited, field, and on the whole I am satisfied with the technique of the operation as performed in this case. The hæmorrhage which may be moderately severe was, in nearly every case recorded, easily checked by pressure, and arises chiefly from the crura cavernosus clitoridis, and usually comes at the moment of separation of the bone. The saw should be used through as wide an arch as possible to avoid bending, and so breaking it, and it should not be removed until perfectly satisfied that the bones have been completely severed. Drainage if required at all should be done from the upper wound.

CONGENITAL DISLOCATION OF THE HUMERUS.

BY

A. MACKENZIE FORBES, M.D., E. HAMILTON WHITE, M.D., and
COLIN H. RUSSEL, M.D.
Montreal.

DR WHITE: The patient, C. T., age 9 months, came under my observation 27th August, 1906, at Little Metis, P.Q. At that time advice was sought on account of a troublesome diarrhoea which had become so severe as to alarm the parents. Incidentally, I was asked to examine the child's arm, which they said had been deformed since birth. The physician who had been in charge at the birth had been consulted on several occasions, but had told the parents that the arm was paralyzed and that nothing could be done for it.

The child was poorly nourished, having been weaned early and fed on milk and water without any special attention to proportions. There was a striking deformity of the right shoulder, but the arm itself showed no marked deformity, and the child could apparently move its hand and forearm. The head of the right humerus was found displaced backward on to the scapula lying in the infraspinous fossa firmly fixed. No other abnormality was made out at the time.

The parents were both healthy and well formed. The mother had an older child, which was healthy. No particulars could be obtained

Read before the Montreal Medico-Chirurgical Society, November 2nd, 1906.

as to the labour, but the child had evidently been partly asphyxiated at birth. It would seem probable that it was in delivery, or during the manipulations to establish respiration that dislocation had occurred. The child's poor physical condition from the prolonged gastro-enteritis did not warrant any immediate attempt at reduction.

DR. RUSSEL: C. T., aged 9 months. Examination made on October 29th and November 1st, 1906. The arm is held in the position of pronation, the elbow being slightly flexed. The fingers also are flexed. The right shoulder is smaller than the left, and there are several deep transverse folds between the neck and shoulder. There is some contracture of the biceps, so that the arm cannot be perfectly straightened at the elbow. The shoulder can be elevated, but protraction and retraction are very limited; abduction is impossible. At the elbow extension is good; flexion is practically absent; supination of the forearm is impossible.

The wrist can be extended, and flexed, perfectly. Extension of the fingers is impossible, the action of the interossei (extension of distal phalanges when proximal ones are semi-flexed) is not impaired. Long flexors of fingers and all the small muscles of the thumb and hand are normal.

Electrical Reactions: In the left arm these are normal. In the right arm the following muscles do not react to Faradism: rhomboids (doubtful), supra and infraspinatus, latissimus dorsi and pectoralis major, deltoid, biceps, supinator longus, extensor communis digitorum.

The following react well to Faradism: Trapezius, biceps flexors of the wrist and fingers, and all the small muscles of the hand.

The paralyzed muscles, with the exception of the extensor communis digitorum, are supplied by the 5th and 6th cervical segments. The extensor communis digitorum is usually looked upon as obtaining its supply from the 7th or even the 8th cervical segment through the musculo-spiral nerve. As no other muscles supplied by these segments is affected the case seems to be one of the so-called obstetrical palsies, with probably a lesion of the peripheral part of the musculo-spiral nerve in addition.

DR. MACKENZIE FORBES: The patient whom we have before us to-night was referred to the Children's Hospital by Dr. Hamilton White, who has already read the history of the case. The child was admitted into the wards of the hospital on the 12th September last, suffering from a severe attack of chronic diarrhoea, and it was because of this that nothing for the relief of the deformity, about to be considered, has been as yet attempted. The patient is now nearly nine months of age.

On admission the following facts were noted: The child is poorly nourished. The shape of the head suggests trauma at birth, or congenital deformity; but the history is of the former; the mother having had a long and difficult labour, forceps, at last, having been used.

The right arm is held in an abducted and slightly flexed position. The forearm is acutely flexed. The humerus is internally rotated. The internal condyle of the humerus points backwards. The olecranon process of the ulna points outwards. The pectoralis major is relatively markedly contracted. The deltoid is slightly atrophied. The child's guardians say that the patient is able to both flex and extend the hand. The head of the humerus is felt as a globular prominence underneath the spine of the scapula near its acromial extremity, and is freely moveable with the shaft of the humerus. There does not appear to be any marked abnormality in the scapula. The left arm is slightly longer than the right, but there is no marked difference in the length of the separate bones. The lower extremities seem to be normal. There is a slight umbilical hernia. The left ear is hardly normal.

As Dr. Russel will demonstrate these deformities are accompanied, and perhaps partly accounted for, by paralysis of the group of muscles shown by Erb to be supplied by the anterior divisions of the 5th and 6th cervical nerves, which, under such conditions, is usually attributable to injury at birth.

The Congenital Dislocations of the Humerus may be divided into three classes: (1) True congenital misplacement; (2) dislocation caused by violence at birth; (3) acquired subluxation, due to injury to the brachial plexus.

Although dislocation by traumatism, such as torsion or traction, at the time of birth has been demonstrated to be anatomically less likely than fracture or separation of an epiphysis, we must consider whether the dislocation in the patient now before us was prenatal, was caused at the same time as the injury to the nerves of the brachial plexus, which is the cause of the extensive paralyses of the muscles about to be described, or whether it followed this injury and depended upon it.

True congenital or prenatal misplacement is extremely rare. On examining the available literature on this subject it seems that not more than twenty-five references have been published since the earliest times. On examining these references we find that very few of those reporting such deformities have been able to do more than suggest their prenatal origin. There have been but few post-mortem examinations made and few open operations performed for the reduction of this

dislocation. Scudder of Boston has mentioned that a difference in the measurements of the bones composing the upper extremity would suggest such origin, but it seems that accompanying paralyses might be considered sufficient to account for any moderate difference as seen in this patient. Congenital deformities accompanying a dislocation at the shoulder, as are suggested in this case, would also suggest a prenatal origin, but the extensive paralysis of the muscle surrounding the joint is, in itself, a sufficient cause for the deformity described.

A displacement of the humerus even when secondary to injury to the brachial plexus is usually of greater importance than the paralysis, since it prevents functional use, and is thus in a greater degree accountable for the loss of growth, and the comparative uselessness of the extremity.

The first indication in the case before us is to endeavour to reduce the deformity, as, until this is done, we cannot estimate the actual degree of irremediable injury to the nervous apparatus. This we shall endeavour to do, and I hope to be able to present favourable report at a later date.

PERFORATION OF THE STOMACH: OPERATION TEN HOURS LATER: RECOVERY.

BY

INGERSOLL OLMSTED, M.B.,
Surgeon to City Hospital, Hamilton.

The patient, J. F., a teamster, aged 40, was seen with Dr. A. G. Arnott of Hamilton, on 13th September, 1906.

History: He was always well until eight or ten years ago, when he began to be troubled with indigestion. He had distress two or three hours after meals; it was of a burning, dull character. A little food or soda would relieve the pain entirely. He never vomited, but occasionally belched up some bitter fluid. The attacks, at first, would last a week or two; but later they persisted longer. Purgatives would often relieve him. The bowels became irregular, and during the last four or five years, were constipated. He passed mucus with the stools since the beginning of the disease in large quantities and long ropy masses. Two years ago he went to the West where he gained in health, and weighed 205 lb. When there he was free from stomach trouble, but the mucus kept coming, though not so copious as before. When he returned, two years ago, he drank three glasses of whiskey

Read before the Hamilton Medical Society, Wednesday, October 3rd, 1906.

with friends, and the stomach began to trouble him at once, and has continued to do so ever since. At first he could eat any amount of food and feel better for it; but about a year ago he found he could not eat so much, as there was distress immediately after meals. He felt he must restrict his diet; he lost flesh, and now weighs 150 lb.

During the early history of his case he had dark tarry stools at times, but never vomited any blood. He passed some dark stools two weeks ago. The pain was felt in the pit of the stomach, and lately passed through to the centre of the back.

On the 13th of September he went to work, feeling as well as usual; but, when lifting a heavy package, he felt sudden pain across the upper part of the abdomen. He took off his load, rested for a time, and started to reload, but felt pain. He attempted again to put on a load, but had to give it up, and go home.

He went by car to his home, and at 11 a.m. sent for Dr. Arnott who found tenderness over the gall-bladder region, with slight rigidity. Hot applications were applied and small doses of acetanalid ordered. In the afternoon he had severe pain, and Dr. Haist was quickly sent for. He gave a quarter of a grain of morphine. Dr. Arnott saw him again at 5 p.m., when he looked very ill, with tenderness over abdomen and rigidity at the upper part. I saw the patient at 6.30 p.m., when he was having a chill and rigour. There was board-like rigidity of the abdomen; temperature 100, pulse 80; could not palpate the abdomen on account of tenderness. He was ordered to the hospital, but before the ambulance arrived he demanded another hypodermic of morphia.

Under ether narcosis, a three inch incision was made through the right rectus. The gall bladder was found moderately distended with bile, spotted with flakes of lymph, but contained no stones. On feeling for the stomach there was an escape of flaky lymph and pus. Gauze was immediately packed in to take up the fluid; the incision was enlarged outwards, and wet compresses were placed outside of the soiled area. The field was then thoroughly exposed, and a stellate opening found in the anterior surface of the stomach midway between the two curvatures, and two inches from the pylorus. Around this opening there was a cicatrix and thickening, which showed that the ulceration had perforated through the floor of an old indurated ulcer. There was no evidence of any other ulcers either in the stomach or duodenum. This opening was closed with a series of mattress sutures passed transversely to body axis, thus forming a vertical fold of the stomach. A careful peritoneal toilet was then made, without flushing, and a large gauze wick passed through a stab wound in the right loin, to drain

Morrison's pouch; the colon was then drawn up to protect the suture line, and the anterior abdominal wound was closed. The patient was placed in bed in a semi-sitting position, and a continuous saline injection was given by the bowel, after the manner advised by Murphy. The following day the patient looked, and felt, well. There was considerable drainage from the loin, and slight distension of the lower part of the abdomen. The pulse was 98, and temperature $100\frac{1}{2}$.

The subsequent history was uneventful, except for an infection of the abdominal wound.

He was allowed water by the mouth on the third day, and food on the sixth. Drainage was removed from the loin on the eighth day. Bowels acted naturally, and the mucus decreased rapidly from the stools.

This case is of interest in many respects. He never had any vomiting. The pain at first was two or three hours after meals, and was relieved by food or alkalies, but later the pain was felt shortly after a meal. At certain times his appetite was excellent, and he could eat a large quantity of food, but during the last two years he has been compelled to limit the quantity of food.

The presence of mucus in the stools, is an unusual symptom. It more frequently follows irritation from appendicitis, and it is not improbable that the appendix may have been inflamed in this case. We do know, however, that mucus has almost ceased to be passed, and this supports the view that the stomach was primarily at fault.

The presence of tarry stools should always suggest ulceration. The presence of occult blood should always be sought for, yet one must not forget that it may be present in functional nervous disorders without ulceration.

The position of the ulcer is also unusual. The majority of gastric ulcers are situated at the pylorus, posterior surface, or on the lesser curvature near the pylorus, and extending down on both the anterior and posterior surfaces, the so-called saddle ulcer. In this case the ulcer was at the base of the antrum on the anterior surface, and thus in the grinding portion of the stomach.

It is interesting that all the symptoms disappeared after the infolding of the ulcerated area. The symptoms of perforation are characteristic of this grave condition: namely, sudden pain in the stomach, followed by more or less collapse and rigidity; as the condition advances the abdomen becomes board-like, and occasionally is followed by chills and a rigour. The pain is difficult to control by morphia. The liver dulness may or may not be absent.

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THE OPERATION OF PUBIOTOMY.

Since the memorable lecture at the Clinique Baudelocque on the 7th December, 1891, when Pinard reintroduced symphysiotomy into France, the fortunes of that operation have waxed and waned. Heralded as the coming conservative operation which would displace craniotomy upon the living child, and in most cases replace Cæsarean section, it was received with enthusiasm and practised extensively in Europe and America for a few years. Then, gradually, it fell into disfavour, and now is practically dead, having been replaced by the improved Cæsarean section. In order to avoid the injuries to the urethra, bladder and soft parts, and the infection which frequently followed symphysiotomy, Gigli proposed to modify the operation by sawing through the pubic bone near the pubic spine. This operation, called pubiotomy or hebotomy, has been again modified by Döderlein, Stœckel Bumm, Seeligmann and others, and is now being practised extensively in Europe and the United States.

The second case done in Canada, was reported by Dr. Evans at a recent meeting of the Medico-Chirurgical Society of Montreal, and a full report of the paper and discussion appears in this issue of the JOURNAL.

It seems that the new operation avoids some of the dangers and risks of the old symphysiotomy, and may be accepted as having a decided value in a certain limited class of cases. It does not pretend to compete with Cæsarean section for the *absolute* indication; and, furthermore, it has this great advantage that the technique is simple, and that it can be done with comparative safety at the patient's own home. It is thus easily within the reach of those who have little or no experience in abdominal surgery, or have not the advantage of the skilled assistance and care, which can be had only in a well equipped hospital. It can never wholly replace Cæsarean section even for the *relative* indication, although some of its enthusiastic advocates claim as much for it; it is to be hoped, therefore, that cases for operation will be selected with care, and that it will not suffer from the over zeal and enthusiasm of its friends.

Briefly, then, Pubiotomy is an alternative operation in flattened pelves where the true Conjugate measures 7 cm. or over; it is most suitable where the C. V. is between 8 and 9 cm.; and the nearer the C. V. approaches the limit of 7 cm., the less favourable will the operation be for the child. It must never be forgotten that pubiotomy, is essentially a child's operation, with the definite object of delivering a living child. When the flattening is so great that the child must be subjected to great compression during extraction, its chances will be greatly imperilled, and pubiotomy will be really less favourable for it than Cæsarean. Of course the amount of probable compression during extraction can not be estimated wholly by measuring the C. V.; the size of child must be taken into account as well, and an estimate made of the relative disproportion between the foetus and the canal through which it must pass. Where there is considerable disproportion, the maximum enlargement may be obtained by making the pubiotomy approach as nearly as possible the symphysis, and by making the incision parallel to the vertical line of the joint. The further the incision is made from the symphysis, and the more it diverges from the parallel, the less will be the separation between the cut ends of the bone, and therefore the less will be the gain in the length of the true conjugate.

The sub-cutaneous method which has been recommended by some operators has certain advantages but has disadvantages also, in that it favours hæmatoma, by allowing the collection of blood which is always effused in considerable quantity after the bone is sawn through. If one

small incision were made, the blood would drain away, and the risks and inconveniences of hæmorrhage would be avoided.

Probably the technique will still be modified and improved, and better results will be made possible, but there can be little doubt that the whole future of pubiotomy will depend more upon the care with which the cases are selected than upon refinements in the technique of the operation.

Another practical point was brought out in the discussion as the result of experience with the older operation; that the patient should be kept in bed for some weeks, until involution is complete, thus avoiding troublesome sequelæ such as subinvolution and displacements.

FOREIGN-BORN INSANE IN CANADA.

Ontario is determined to free itself from the burden of supporting the persons of feeble mind, who are being systematically deported to Canada. There are now four lunatics under the care of the inspector of asylums of Ontario, awaiting return to Sweden, and one to England.

By the census of 1901, the population of Canada was 5,311,315, the number of foreign-born being 699,500; the total of the insane was 16,622, and of these 2,818 were foreigners. From these returns it will be seen that a little over thirteen per cent. of the general population—that is to say, the imported element—furnished over seventeen per cent. of so-called Canadian lunacy. Stated in another form, if the native Canadians alone are considered, there is one insane person in every 339 of the population; while the proportion among the foreign element alone is one in every 243.

During the year 1903 there were admitted to Canadian asylums 2,213 insane persons. Of this number 1,126 were born in Canada. The remaining portion, 487, representing 22 per cent. of the admissions, was foreign born. At Verdun Asylum 2,048 patients have been received since the opening of the establishment up to 1905, and of this number forty per cent. were of foreign birth. In the same institution there were in June 1905 no less than thirty persons, in a population of four hundred and sixty, who, if subjected to anything but the most cursory examination, would never have been allowed to set foot in the country.

In 1891 there were 13,342 insane persons in Canada in a population of 4,119,893; in 1901 there were 16,622 in a population of 5,318,606, being an increase, in ten years of nearly twenty-five per cent. in the number of lunatics, whereas the increase in the total population was less than thirteen per cent. We are not pretending that this increase is due wholly to the immigration of feeble-minded persons, but a large part of it undoubtedly is.

BY-LAW AGAINST SPITTING.

On October 13th. the Quebec Official Gazette published the text of the new by-law against spitting in public places.

The by-law, as published, reads as follows:—Whosoever shall spit on the sidewalks of streets, roads and public places, or on the floor of any public building or vehicle, or on the deck of any public boat, shall be liable to a fine not exceeding five dollars for the first offence, and to a fine not exceeding ten dollars for every subsequent offence.”

This by-law came into force on Sunday, October 28th.; and, if the naked eye can be trusted, we have not observed that any improvement has followed. Indeed a correspondent of a newspaper relates that he spent some time in watching a policeman and a member of the Legislature diligently infringing the provision of the law. We are disposed to think that this observation was in the main correct.

No law, however stringent, will immediately destroy the function of the salivary glands, or of the bronchial mucous membranes, in policemen, legislators or private persons. A rigid enforcement of the law might create a new environment in which this function would be largely inhibited, but in the meantime some provision should be made for those who feel themselves obliged to spit. In London, we believe, a man is permitted to expectorate into the gutter, but that poor privilege is denied to us. This practice would involve a daily cleansing of the gutters, but we are not so simple-minded as to believe that such a labour would be undertaken in Montreal. The law, however, will exercise an inhibitory influence and to that extent is worthy of commendation. The Recorder is certainly giving the law an unqualified support.

VACCINATION AND TETANUS.

We take pleasure in calling the attention of those philanthropists who go by the name of anti-vaccinationists to a case of death from Tetanus following vaccination, which is so admirably reported in this number of the JOURNAL—an example of candour, which they would do well to follow.

If vaccination is an evil thing for the race, the profession of medicine desires to be informed of the fact; and in return for this choice morsel, we would ask our dissenting friends to show an equal willingness to make public the evil results which follow the neglect of the practice of vaccination.

In the discussion which followed the presentation of this case before the Montreal Medico-Chirurgical Society no evidence was adduced that the vaccine which was a local product was impure. The infection in all probability occurred in the same way as it would in any other wound. It was made clear that not less attention, but more, should be given to vaccination, and the operation—for operation it is—should be conducted with all surgical precaution.

The Canadian agents for Apollinaris water have favoured the public with a circular letter "reprinted from the MONTREAL MEDICAL JOURNAL." We have no desire to suppress the truth, so we hasten to complete the information by explaining that the article in question was reprinted from our advertising pages. The extract contains of course, a reference to the "leading English authority" which published a laudatory article on January 30th, 1904, by their "special commissioner," not, we should add, in their advertising pages but in the very body of the Journal. We made some comment upon the transaction at the time, and hope that the proprietors of this excellent water will reap the reward of their enterprise.

The Practitioner for November contains an article upon "The Liver as a Toxine Filter." The paper was read before the Eastern Oregon District Medical Society, and the author's address is given as Arrowhead Hot Springs, California. We mention these facts, because the paper is the most brilliant piece of writing which we have seen in recent medical literature. The author is Dr. Woods Hutchinson. If such contributions are common before the Eastern Oregon District Medical Society we should like to have early information of them. Such a discovery lightens the gloomy task of reading exchanges.

A profitable evening is before the Medical Society. On the 14th December the annual report of the Montreal Maternity Hospital will be laid before the members, and at a subsequent meeting it will be discussed. This is the practice which prevails between the Rotunda Hospital and the Dublin Medical Society, and is entirely commendable. The physician accoucheurs give an account of their stewardship; they invite suggestions, advice or criticism, and present to the profession the results of their experience for the general good.

Reviews and Notices of Books.

MINOR MALADIES AND THEIR TREATMENT: By Leonard Williams, M.D., M.R.C.P. London, Baillière, Tindall and Cox. Canadian Agents, J. A. Carveth and Company, Toronto. Price \$1.50.

This volume of 383 pages is designed to supply the recent graduate with information of which he is sadly in need. As a rule he is well qualified to diagnose and treat diseases which he is not likely to encounter. His lectures and text books have provided him with ample means for dealing with the classical diseases, but he is at a loss as to the proper procedure in the simpler matters with which he will have to do in the first few years of his professional life. A book of this kind is especially needed since less attention is being given every year in the medical schools to the treatment of the commoner diseases in which the comfort more than the safety of the patient is at stake. Cold, coughs, sore throat, indigestion, constipation, diarrhoea, vomiting, giddiness and headache, whilst relatively of little importance in themselves, will tax the skill of the physician as heavily as the more grave conditions. The measures which are recommended in this book appear to us to be entirely sensible, and, if more freely employed than they are, would do much for the comfort of the patient and for establishing the usefulness of the physician.

MEDICAL ELECTRICITY. A Practical Handbook for Students and Practitioners. By, H. Lewis Jones, M.A., M.D., F.R.C.P. Lond. Fifth Edition with illustrations. London, H. K. Lewis, 136 Gower Street, W.C., 1906.

So recently as January 1905 we had occasion to call attention to the fourth edition of this book. The present volume is the fifth edition and appears with certain alterations. A rearrangement of the subject matter has been adopted; sections have been added upon the current waves of coils employed for medical purposes, upon the use of mechanical means for obtaining interrupted currents of measured duration; upon the introduction of drugs by electrolysis, and on the treatment of rodent ulcer by zinc ions. A chapter has been added on the treatment of skin diseases by electricity, and the chapter on X-Rays has been extended to sixty pages. Yet this volume contains 11 fewer pages than that of 1905. Upon the previous occasion we said that no practitioner of medicine could afford to remain in ignorance of the value of electricity and its allied forms of energy in the treatment of diseased conditions, and that

this book of Dr. L. Jones would prove to be a safe guide. We repeat these statements with more confidence as this opinion is borne out by the wide recognition which this book has received. It is an important addition to Lewis's practical series.

THE MEDICAL STUDENTS' MANUAL OF CHEMISTRY. By R. A. WITTHAUS, A.M., M.D. William Wood and Company, New York. Price \$4.00.

The sixth edition of this admirable work has just appeared. It is very complete and many portions, notably the organic and physiological chemistry, are rewritten and greatly extended. The arrangement and the selection of the matter shows the author to be not only a scientific chemist but also one who has a very clear idea of the chemistry useful to the medical student and the general practitioner. The subject throughout is confined as closely as may be to the general truths of chemistry and its applications to medical science. The book covers the entire field of chemistry beginning with physical action of chemical interest leading up to the discussion of chemical phenomena in general and then the elements in their natural groups according to the periodic law of Mendelejeff. Some 300 pages are devoted to organic chemistry, and 200 to physiological chemistry. The chemistry of the enzymes and proteids is well up to date, and the same may be said on the sections on urinalysis and blood. It is too large a book for a student textbook, but deserves a place on the bookshelf of the practitioner. It is however not pleasant for a British subject to be called upon to face on every page such outrages on the King's English as, "oxid," "sulfat," "chlorid," "sulfid," "Bromin," etc. If "sulfur," why not be consistent and write "fosforus, fysics, fase-rule, and fenol."

R. F. R.

VOICE PRODUCTION IN SINGING AND SPEAKING. WESLEY MILLS, M.A., M.D., F.R.S.C. Professor of Physiology, McGill University, Montreal. J. B. LIPPINCOTT, Philadelphia.

When one considers some of the many divergent and erroneous views held by so-called vocal teachers, Professor Mills' book on "Voice Production in Singing and Speaking" will be welcomed by all who are interested in this subject from an artistic and scientific standpoint.

Although many books on this subject have been written, they have not struck the happy medium; they have been either too technical to reach the lay mind or they have lacked the fundamental principles governing voice production. The author states in the preface to his book:

"Believing that practice and principles have been too much separated, he has endeavoured to combine them in this book. His purpose has not been to write an exhaustive work on vocal physiology with references at every step to the view of various authors; rather has he tried always to keep in mind the real needs of the practical voice user, and to give him a sure foundation for the principles that must underlie sound practice."

Professor Mills has succeeded admirably in showing the relationship existing between the scientific, artistic, and practical aspect of his subject. The first chapter is devoted to the claims and importance of Vocal Physiology. The author lays stress upon the importance of the study of technique, and, at the same time, impresses upon the vocalist, speaker, and teacher, the necessity of having a theoretical, and practical, knowledge of the structures, and working of the mechanism employed.

To quote again, Dr. Mills very aptly states: "The physician to-day who treats disease without reference to anatomy, and physiology, is at best, but a respectable charlatan. Why should teachers, and students, of voice production be content to remain in the advanced present, where they were hundreds of years ago"?

The succeeding chapters follow in natural sequence, and are devoted to a consideration of Breathing, the Voice-Producing Mechanism, Sound, Laryngeal Adjustment, Resonance Chambers, the Registers of the Singing Voice. And the final chapters are devoted to the Fundamental Principles Underlying Voice Production, the Hearing-Apparatus and Hearing in Music. The last chapter deals with the Consideration of General and Special Hygiene and Related Subjects.

Each chapter has been ably dealt with, particularly the one relating to Registers of the Singing Voice, about which so much 'confusion, difference of opinion and controversy' have existed. At the end of each chapter a summary is given which enables the reader to grasp with ease the subject discussed.

This book is undoubtedly one of the most original and comprehensive works on this subject, and it would form a most desirable text-book for teachers, and pupils, and all who are interested in the subject of voice production. It is profusely, and beautifully, illustrated, and in that respect is a credit to the publishers.

A TEXTBOOK OF HISTOLOGY. By FREDERICK R. BAILEY, A.M., M.D.
2nd Edition. Wm. Wood and Company, New York, 453 pages.
\$3.00 net.

The second edition of Bailey's Text-book of Histology, like its predecessor, reflects great credit on both author and publisher.

In the subject matter of the text little change has been made except in the chapter on the nervous system, which has been partly re-written and several new and helpful diagrams have been introduced, assisting materially in the understanding of the various motor and sensory conduction paths. There has been a further elaboration and classification of these conduction paths in the cord and medulla.

In the chapters devoted to general technique and staining, there are new and valuable hints regarding the preparation of histological material, and some new stains are given, especially "Cajal's Method for Staining the Neurofibrils in the Nerve Cells," which is given in detail.

The book, with its numerous illustrations and lucid descriptions, maintains its reputation as a first class text-book of normal histology. The first Edition was warmly commended in our issue of January 1905.

W. M. F.

Medical News.

MONTREAL MATERNITY HOSPITAL

The first report of the operation of the Montreal Maternity Hospital, since occupying its new building has been made public. It deals with eleven and a half months, from the time of opening October 17th, 1905, to the close of the fiscal year September 30th, 1906. We are indebted to Dr. J. C. Cameron, physician-accoucheur, and to Dr. H. M. Little, superintendent, for the following abstract of their results.

During this time there have been admitted 448 patients. Of these 199 were admitted some considerable time before confinement. The total number of hospital days for all patients was 10,904, an average per patient of 24.3 days. The average number of days *ante-partum* for those so admitted was 21.8. The average stay of the patients after confinement was 14.6 days.

GENERAL RESULTS. *Maternal*: Discharged in good condition, 407; transferred to other hospitals, 2; remaining in hospital October 1st, 31; died, 8; total, 448.

INFANTILE: Mothers admitted, 448; admitted post partum, discharged, ante-partum, etc. 53; total 395.

Twin pregnancies were, 8; total births, 403; dead born, still-born and died in hospital, 49; remaining in hospital, October 1st, 19; total, 68; discharged in good condition, 335.

The foetal mortalities are classified as follows: Dead-born, 23; still-born, 10; premature births, (children not viable), 7; congenital malformation, 2; and other deaths, 9; total, 49.

Technique: The routine technique has been based upon the assumption that normally the vagina is free from pathogenic organisms: that is to say, as a preparation for vaginal examination the vulva is shaved, scrubbed with green soap and warm sterile water, and bathed with alcohol, after which a towel soaked in bichloride of mercury 1 in 3,000, or formalin solution 1 in 3,000 is applied for at least three minutes. For hand disinfection permanganate of potassium and oxalic acid have been employed, though there has been considerable latitude allowed in this respect, particularly in the case of private patients, many practitioners preferring lysol and creolin. The use of rubber gloves was commenced early last fall and has become quite general. They are now employed in practically all major operations as well as in the routine work of the Hospital. For operative procedures the vulva is more thoroughly cleansed by the addition of permanganate of potash and oxalic acid to the usual technique noted above. Ante-partum douches have been practically discontinued except in those cases where there is distinct evidence of infection. The use of the post-partum douche is being gradually restricted to cases of severe hæmorrhage and operations such as high forceps where considerable manipulation has been necessary.

THE PELVIS: *Classification of pelves:* Normal, 379; contracted 20; generally contracted, 9; rachitic, 2; flat and rachitic, 6; simple flat, 3; unmeasured pelvis, private patients, etc. 49; total, 448.

From the above table made according to the accepted standard of Michealis and Litzmann it would appear that contracted pelves are unusually infrequent in Canadian women; indeed, the more marked grades of contraction have invariably been noted in those patients from foreign countries.

Pregnancy: The various types of pregnancy are classified as follows: normal, 236; doubtful, including private patients, those admitted post-partum, those in Hospital October 1st, and 1 patient not pregnant, 139; abnormal, 73; total 448.

COMPLICATIONS OF PREGNANCY: *Toxaemia:*

Among the complications of pregnancy the toxaemias have been most frequent.

The unusual frequency of these conditions suggests the urgent need of further study of the partition of the nitrogen excretion. In albuminuria, simple or complicated, the Riva-Rocci instrument as modified by Cooke and Briggs has been a valuable aid in determining the necessity for emptying the uterus. Variations of as much as 80 mm. in systolic pressure have been noted in readings before and after operation.

The treatment of eclampsia has been conservative. The convulsions were controlled by morphia, and chloral, till labor had progressed suffi-

ciently to allow the uterus to be emptied with the minimum of danger to the mother. As result the maternal mortality has been more satisfactory than the infantile.

Abortion: This has been the next most frequent form of complication. There were three complete abortions; while in four instances a threatened abortion was averted by rest in bed and appropriate treatment. Nine cases of incomplete abortion were completed by operation. In all cases the fingers were used to remove debris and the uterine cavity was douched with hot normal salt solution, and left unpacked to allow the freest possible drainage. In the majority of cases this treatment was followed by a chill, rapid rise of temperature, with gradual fall to normal. This phenomenon seemed the result of a rapid absorption by the cleansed inner surface of the uterus of that portion of bacterial toxins rendered more rapidly soluble by the saline. The severity of the symptoms occasioned by this simplest method of treatment is used as an argument against the use of a curette which would not only increase the area from which absorption might take place but also further the passage of organisms through the uterine wall and into the blood stream.

Mitral Stenosis: This complication was noticed three times, the patients all being in fair condition on admission. The gravity of this complication of pregnancy depends absolutely on the degree of compensation present, and the susceptibility of the heart to digitalis.

Among the other complications may be noted diabetes, haematuria with cystitis, concealed hæmorrhage, phlebitis, pyelonephritis and two cases of placenta previa.

Classification of Labour. spontaneous normal, 269; spontaneous premature, 17; induced premature, 4; induction of labor at term, 1; breech extraction, 13; accouchement forcé, 10; basiotripsy, 3 forceps, (high, 7; mid, 20; low, 22); total 49.

Version and extraction, 16; version external, 1; pubiotomy, 1; manual conversion of abnormal presentation with subsequent spontaneous labour, 2; manual removal of placenta, 5; post-partum hæmorrhage, 3; accidental hæmorrhage, 1.

Forceps and Version. Attention is directed to the tables, showing the comparatively unfavourable results of high forceps as compared with version, particularly with respect to foetal mortality and maternal morbidity. No douches were employed after the completion of the version though they were given as a routine after high forceps. The inference is that a douche is unnecessary after an aseptic operation.

Induction of Labour. Labour was invariably induced by Krause's method. Douches were not used as a routine practice either before or

after operation and the results seemed to be equally good whether douching had been used or not. A general anæsthetic was not necessary.

Accouchement forcé. Manual dilatation was always a preliminary to delivery by forceps or version. Two methods were employed, the bimanual and Harris's, Bossi's, Heagar's or other metallic dilators were not used. Immediate suture of cervical lacerations was frequently successful, but the slightest possibility of infection contra-indicated this procedure. Basiotripsy was performed only upon children dead in utero.

A case of pubiotomy is reported by Dr. D. J. Evans in this number of the JOURNAL. Post-partum hæmorrhage was infrequent, though the average length of the third stage of labour was short. Particular attention was directed to the estimation of the time of separation of the placenta, and after this had occurred a modification of Crédé's method of expression was employed.

Manual removal of the Placenta: In four cases where manual removal of the entire placenta was necessary, a pathological condition of that organ or of the uterus was found. That is, in two cases the patient had been curetted after a previous labour or abortion, and the placenta was removed with much difficulty, the villi having penetrated into the muscle wall of the uterus. The presence of a myoma in the uterine wall was answerable for the condition once, while in a further instance, the organ was partially retained owing to an unusual insertion. In all of these four cases the placenta was removed with a gloved hand, and no post-partum douche was given; but in those cases where removal was necessary after operation a douche was almost invariably employed. The results from the stand-point of morbidity do not seem to have been more favourable in the cases that were douched.

Complications of the Puerperium: Complications of the puerperium have occurred chiefly in patients sent in by outside physicians on that account. This was particularly noteworthy in the case of infections; for apart from one febrile case, where a peri-rectal abscess developed as the result of a misplaced suture there was no single instance of childbed fever (*streptococcus*) noted in the wards, among the hospital's own patients. Gonorrhoeal infection was noted nine times, the diagnosis being made after examination of the lochia. There were no breast abscesses, careful treatment during the stage of engorgement having been an efficient preventative.

Among the other complications may be mentioned thrombosis, peritonitis, parotitis, mitral stenosis and puerperal insanity.

Care of Premature Infants: Owing to lack of space the incubator in use at the old maternity has not been employed, nevertheless there was

unusual success in rearing premature infants, which can only be attributed to the devotion of the nurses, and the careful methods of artificial feeding employed. Two babies weighing at one time or other less than three pounds have been successfully reared, while with those of greater weight the results of artificial feeding have been excellent. In most instances mixtures of cream and whey have given uniformly good results, though in others the dilution of whole milk with water or barley water has seemed preferable.

Ophthalmia: Smears have been made from the secretion in all cases of even mild conjunctivitis. There have been but two cases of severe ophthalmia, and in but one of these was the gonococcus the infecting agent. In this instance the mother was infected and in spite of the usual treatment (instillation of 2 per cent. silver nitrate) one of the child's eyes showed evidence of infection about the eighth day post-partum. The eye was markedly improved, but not quite normal, when the mother insisted on removing the child on the fourteenth day.

Morbidity: All cases in which the temperature at any time during the puerperium has reached, or exceeded, 38.1 C (100.6 F) have been classed as morbid. In addition, for the purpose of comparison with the statistics of the Rotunda Hospital in Dublin, figures have been prepared based upon the standard suggested by the British Medical Association. According to the Hospital's own standards, which, it may be said, seems much more exact, the morbidity percentage was 16; according to the British standard it was but 9.18. When it is remembered that the temperatures were taken every four hours, and for fourteen days, it will be seen that this last figure compares favourably with the 8.77 obtained in the Rotunda.

Maternal Deaths. There were eight maternal deaths during the year, and brief synopses of the clinical records are given, together with the findings at autopsy in six, of the eight cases.

1. Puerperal septicæmia with peritonitis. A forty-six year old primipara brought in from a private lying-in-hospital, where she had been rather severely handled. The child was dead and basiotripsy was done. Death four days post-partum.

2. Puerperal septicæmia with metastatic abscesses. Patient confined outside, and admitted in the fourth week of the puerperium. She died three days after admission.

3. Patient admitted to hospital in deep, probably post eclamptic coma. The child was dead and the patient herself died within about twenty hours after her admission. No autopsy.

4. Puerperal septicæmia with peritonitis. Admitted post-partum. The placenta had been removed manually. The patient died on the fortieth day.

5. Pyelonephritis with septicæmia and cystitis. Patient admitted suffering from severe pain in left lower quadrant of the abdomen, and with evidence of cystitis and specific vaginitis. Spontaneous premature labour, and death on the fourth day post-partum.

6. General streptococcus infection of mother and child. Patient admitted in labour and suffering from fever, the result of ulcerative sore throat. She was not examined during labour which occurred spontaneously within two hours of admission. Immediately after labour her condition became grave and she died suddenly ten hours post-partum. The child, apparently healthy, when born, died the following morning. Evidence of general streptococcus infection was present both in mother and child, the case being one of undoubted auto-infection with subsequent placental transmission.

7. Nephritis. Patient admitted at request of practitioner, who had her under observation for several days. She had had several convulsions, and when admitted was in deep coma, from which she did not rally.

8. Pernicious vomiting with hepatitis. The patient, almost at term, was admitted at request of her physician on account of uncontrollable vomiting. She was kept under observation for three days and delivered herself spontaneously of a dead child. The vomiting persisted however, and she died three days later, the result of toxæmia.

ROYAL VICTORIA HOSPITAL.

Monthly Report for October:—Patients admitted during the month 294; patients discharged, 272; patients died, 14. Medical, 94; Surgical, 118; Ophthalmological, 19; Gynaecological, 38; Laryngological, 25; *Out-door*: Medical, 904; Surgical, 839; Eye and Ear, 423; Diseases of women, 142; nose and throat, 480; Total 2788. Ambulance calls, 91.

CANADIAN MEDICAL ASSOCIATION.

The members of the medical profession in Montreal met on November 8th, in the rooms of the Medico-Chirurgical Society, to make preliminary arrangements for the meeting of the Canadian Medical Association which will be held in Montreal in 1907. The president, Dr. A. McPhedran of Toronto presided, and there was a large attendance of members.

Dr. McPhedran addressed the meeting and outlined the plan which he thought should be followed. He discussed the most suitable time of year for the meeting as between June, August or September. He referred to the necessity of an official Journal for the Association, and recommended an additional number of sections.

At the conclusion of Dr. McPhedran's address a committee of twenty members was named to undertake the arrangements, whose names are:

Drs. Shepherd, Blackader, Lachapelle, England, Wm. Gardner, Roddick, Armstrong, W. F. Hamilton, Shirres, St. Jacques, Harwood, De Martigny, Garrow, Reddy, Boulet, Monod, Mercier, Villeneuve, Aubrey, Hingston, and Birkett, and Mackenzie, *ex officio*.

Contagious disease cases, in Montreal according to the records of the Hygiene Department have reached the total number of 396 during the month of October, and bring the total number of cases since the beginning of the year up to 3,642. Measles claimed the largest number of patients during the month, 90 cases being reported. Typhoid fever comes next on the list with 80 cases. Of trachoma 10 cases have been discovered among immigrants during the month, making the first to be reported during the present year.

A protest against the appointment of Dr. Coughlin, of Peterboro, as superintendent of the Institution for the Deaf and Dumb, was made at a meeting held on 27th October by the Toronto members of the Ontario Deaf Mute Association.

The medical practitioners of the Counties of Renfrew, Lanark and Carleton have formed a new organization which will be known as the Ottawa Valley Medical Association. The first meeting was held in Arnprior and the next will be held in Carleton Place. Dr. Preston was elected President, Dr. Lynch Vice-President, Dr. Kelly Treasurer and Dr. McIntosh Secretary.

Dr. A. N. Trembert, of Brantford, died on the 4th of November, 1906 in the 72nd year of his age. Dr. Trembert had studied his profession in Munich.

Dr. William A. Ball died on the 3rd of November, 1906 in the 38th year of his age. Dr. Ball was a graduate of Trinity, and of the University of Toronto.

Dr. William Warwick has been appointed Assistant Pathologist to Dr. G. A. B. Addy in the St. John General Hospital. Dr. Warwick is a graduate of McGill, '04.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

FRANCIS W. MURRAY. "Early Operation in Traumatic Intracranial Hæmorrhage." *Annals of Surgery*, September, 1906.

This is a good general article and is useful in that it points out to the general practitioner the great responsibility that so frequently devolves upon him in the matter of the early diagnosis of intracranial lesions. The author complains that there still exists in the mind of the general practitioner a great deal of confusion as to the condition inside the skull following upon any given traumatism, especially in regard to the differentiation between concussion and compression. He points out that too many cases are still regarded as concussion, after all the classical signs of compression have been present even for days; and on the other hand that, when the physician finally does come to the conclusion that there is something beyond mere concussion, he is too apt to call it contusion or laceration of the brain, and *ipso facto* inoperable; whereas in this latter instance it is often purely subdural or epidural hæmorrhage which might be relieved by operation. The object of his paper in fact is to suggest a more frequent resort to exploration of the skull in the hope of saving otherwise fatal cases. He cites a number of cases illustrative of the difficulties of exact diagnosis and of the value of exploratory operation. While he says nothing particularly new with regard to epidural hæmorrhage his opinions concerning the treatment of subdural hæmorrhage are, as the tendency now is, towards a greater radicalism. The expectant treatment is no longer justifiable, at least in many cases. Contusion of the brain is not so frequent an accompaniment as was formerly supposed, and in his opinion its presence is not only not a contra-indication, but on the contrary, an indication, inasmuch as by the removal of the clot the cerebral circulation is improved, and thus a beneficial influence is exerted on the accompanying contusion. He refers to the analysis of subdural hæmorrhage by Bowen in Volume 59 of Guy's Hospital Reports, which shewed that out of 72 cases of traumatic subdural hæmorrhage, of which 52 cases were operated on, there were 28 recoveries. That is well over 60 per cent. of recoveries by operation. A rather significant fact, and one which suggests that the results might have been better, was that in ten of the 20

non-operated cases death was due solely to compression from hæmorrhage, a condition favourable for operation. He concludes therefore that when hæmorrhage, whether subdural or epidural, is at all likely, and in the presence of marked compression, the logical indication is removal of the clot, which necessitates an exploratory operation, and that the indication is as strong in the one as in the other. In conclusion however, he sounds a note of caution, in that he does not agree with those who advise that the skull should be opened in every doubtful case.

H. A. BALLANCE. "Cerebellar Hæmorrhage: Operation: Recovery:"
Surgery, Gynaecology and Obstetrics, August, 1906.

Mr. Ballance here reports a case which may be designated as unique. The patient was a boy of 12, admitted into hospital in the year 1902. Two months previously he had fallen upon his head off another boy's back, the head striking the ground over the parietal eminence of the right side. He was dazed, but could walk home; had nose-bleed but no vomiting, and was up and about the next day; appearing to have been well for some weeks. Six weeks after the accident and two weeks before admission he began to suffer from severe headache, giddiness, frequent vomiting, unsteady gait, weakness in the left leg. Within the previous two days he had become very drowsy. Upon examination he lay curled up on his left side, retraction of the neck was painful, temperature 100, pulse 80, pupils equal, of medium size, reacting well. He had a well marked double optic neuritis but no ophthalmoplegia. His gait was staggering and he tended to fall backwards to the right. He had a distinct weakness, and inco-ordination of the left arm, and the left leg was weak; face unaffected; left knee jerk exaggerated, right diminished, no clonus, no anaesthesia; cutaneous reflexes normal. Headache was severe and frontal; he had giddiness on sitting up, objects rotated from left to right during attacks of giddiness, and he himself seemed to be going in the same direction. This, by the way, according to the observations of Stewart and Holmes, indicates definitely an intra, as opposed to an extra, cerebellar lesion, while the direction of the rotation, in this case to the right, indicates a lesion of that side. He was kept under observation for ten weeks. At the end of the first fortnight some weakness was apparent in the lower part of the face on the left side. Lateral nystagmus to the left developed, and paresis of conjugate deviation to the left; no squint; sight progressively worse. The left paresis and staggering gradually increased, but the vomiting and headache grew better. Operation five months after accident. The left cere-

bellum was opened in two stages; in the substance of the lobe at a depth of $1\frac{1}{4}$ inches, a clot was evacuated; no evidence of new growth. Recovery was slow but uneventful. Four years later he was in excellent health, there was no staggering, co-ordination was good. There was still a slight lateral nystagmus of large excursion to the left, and oscillation was also present on upward movement of the eyes. Vision was almost normal. There remained also a slight left paresis of the arm and inco-ordination on intentional movement. The author remarks upon the rarity of primary cerebellar hæmorrhages. When they do occur they are nearly always due to disease. He can find no record of any previous operation for hæmorrhage. Only one case has been found of a primary traumatic cerebellar hæmorrhage reported by Ratcliffe of Birmingham in 1894. This case died $4\frac{1}{2}$ hours after a fall on the head with a free interval. The hæmorrhage at autopsy was found in the middle lobe of the cerebellum with break into the fourth ventricle. He calls attention to the simulation of a tumour which his case presents, showing as it did a latent period of six weeks before the onset of symptoms. Naturally, the reviewer cannot help suspecting that possibly this hæmorrhage was still in the substance of a tumor, in spite of the lack of evidence. Occasionally one is obliged to await autopsy findings before arriving at absolute certainty; and occasionally one does not even then arrive.

E. W. A.

CHARLES H. CHETWOOD, M.D. "Prostatectomy in Two Stages." *Annals of Surgery*, October, 1906.

The procedure advocated in this article comprises a preliminary perineal drainage, followed by a perineal prostatectomy when the condition of the patient has improved. It is indicated in that class of cases which may be described as bad risks. A summary of these cases shows the average age to be 70. Two of them, in the neighbourhood of 80 years, were exceedingly feeble, and were considered as questionable risks on this score. One gave evidence of advanced renal implication. There were emergencies, in that they had for several days suffered from acute retention relieved by aspiration. One of these had infiltration of urine in this prevesical region and two of them intravesical hæmorrhage. Seven out of the eight reported had the combined operation performed; one case, complicated by advanced renal disease, had perineal drainage and the galvano-cautery. All of them have done remarkably well, the last reports dating from several weeks to twelve months after operation. Special stress is laid upon the great value

of formaldehyd gelatine as a local hæmostatic. With its employment he now never has any serious bleeding while operating, and its use prevents post-operative bleeding and clot formation with consequent blocking of drainage tube. As a result of the preliminary drainage the prostate is relieved of its congested condition, and the line of drainage between the prostatic tissue and capsular surrounding is more accessible and easily separated.

J. ERNEST LANE. F.R.C.S. "A Review of Recent Work in Venereal Disease." *Practitioner*, October, 1906.

During the past year the spirochaete pallida has been the object of much research. This bacillus, discovered by Schaudinn in certain syphilitic lesions, is a minute protozoon, the average length being 5-10 microns, and breadth $\frac{1}{2}$ micron; in shape it is curved somewhat like a corkscrew, the curves varying in number from 4 to 20, while it is sharpened at its extremities. The organism is motile, and occasionally flagellated. So far it has not been grown on any artificial culture media. It must be distinguished from another spirochaete which is found in ulcers, venereal and otherwise, and in the smegma preputii. This forms a larger spiral with fewer curves, is saprophytic, and stains more readily, and is known as the spirochaete refringens. The points in favour of the theory that this spirochaete plays an important part in the aetiology of syphilis are given as follows: Alvarez found it constantly present in the various stages of syphilitic lesions, but never in non-syphilitic lesions. It was found in the organs of congenital syphilitics, in the placenta, and in the secondary lesions of monkeys, being capable of transmission by inoculation from one animal to another. Pereira concludes that the infective virus of syphilis, whatever its nature, is not ultra-microscopic; that though not present in tertiary lesions it is invariably found during the actively contagious periods; that it was present in the internal organs and blood of congenital syphilitics, and in monkeys artificially infected with syphilis, but never found in any other morbid condition, or in the healthy subject. Levaditi has arrived at the following conclusions: The influence exerted by the spirochaete on the genesis of visceral and cutaneous lesions, as well as on the course of the disease in the new-born, is evidenced by the fact that the organs in which this protozoon is found in the greatest numbers,—the liver, lungs, suprarenal capsules and skin,—are those most affected by the syphilitic veins. Organs, such as the brain and kidneys, which are not so frequently attacked in congenital

syphilis, are comparatively free from the organism, a fact which definitely disproved the hypothesis that the spirochaete was only a secondary infection. This hypothesis was also rendered improbable by the fact that a large number of the spirilla were found in the internal organs of a foetus born dead, and in children, who died after a few inspirations, and who had nothing introduced into their digestive tract. There was a distinct relationship between the severity of the disease and the number of the organisms found. The organism was found in the greatest numbers in the liver, which was the organ to first receive the blood charged with the virus from the maternal placenta, and this organ was the one most frequently attacked in congenital syphilis. The influence exercised by the spirochaete on the genesis of syphilitic lesions is a direct one, and is not due to any toxins elaborated by these parasites. The foetal organism defends itself against this invasion by a phagocytosis, especially well marked in the pulmonary alveoli. Maclellan, on the other hand, believes that the spirochaetes are merely stages in the development of the specific organism. He has found a round and much smaller body to be much more frequently and abundantly present and has traced the development of these bodies up to the spirochaete form. Thesing considers there is no proof of the spirochaete being an aetiological factor in syphilis: while Castellani found an absolutely identical organism in seven out of eleven cases of yaws. Metchnikoff, in a paper on the prophylaxis of syphilis, compares the mortality rate of this disease with others and found that of 734 deaths over 11 per cent. were due to syphilis and its sequelæ, as against 22 per cent. due to tuberculosis, and 10 per cent. to pneumonia. So far the attempts to secure an efficient serum or vaccine have not been successful, and for many reasons sero-therapeutic measures do not appear to be of practical application. The method which has given the best results is the application of a mercurial ointment, one part calomel to three of ointment, to the point of inoculation. Numerous experiments have shown that when this ointment was thoroughly rubbed in to the infected part within an hour after inoculation no subsequent symptoms of syphilis developed. Regarding the intra-muscular treatment, Lambkin believes this method to have been of very great use in improving the service. He has found the soluble salts of mercury to be slow and untrustworthy in action. Of the insoluble salts calomel is by far the most active, and might be reserved for urgent cases where a rapid effect is required, as its introduction is very painful. Salicylate of mercury was found to be untrustworthy and slow. He now prefers a cream made of metallic mercury and lanolin, ten minims of the

cream representing one grain of mercury, and claims that it is especially indicated on account of its gradual, even, and slow absorption. The dosage is one injection a week until all active symptoms have disappeared, generally for six weeks to two months, followed by a fortnightly injection for three months, then a two months' rest, then a fortnightly course of injections for three months, the average period of treatment and repose being two years. Mr. C. Andry has employed a suppository made up of cacao-butter and metallic mercury three centigrammes, the dosage being one suppository a night for a month, then a rest for four or five days followed by another month's treatment, and so on alternately. He does not consider it equal to intra-muscular or inunction treatment in severe cases, but found it quite satisfactory in mild cases, preferable to renal treatment in cases where the intestinal tract was deranged, and the most efficient plan of treatment in children.

RICHARD DOUGLAS, M.D. "The Etiology, Prognosis, and Indications for the Surgical Treatment of Tuberculous Peritonitis." *Amer. Jour. Med. Sciences*, October, 1906.

The writer has collected quite a large number of statistics from various investigators into the etiology of tuberculosis in general and tuberculous peritonitis in particular. In seeking to trace the channel of infection of the peritoneum, it must be remembered that the bacillus is immobile, slow of growth, and produces very varied tissue changes in places where it lodges. Quite a number of investigators show tuberculous infection may take place during intra-uterine life through the circulation, and also by extension from a tuberculous Fallopian tube. The writer is inclined to think that, though, at present, the general belief is that tuberculous peritonitis is secondary, evidence will soon be forthcoming to show it may be primary, and cites results obtained by research work along this line. The subacute and chronic ascitic forms give the best prognosis. In only exceptional instances of complications and for the relief of special conditions should operation be undertaken in the fibrous form. The ulcerous form offers an unfavourable outlook, but even these may be cured. All forms but the peracute are at least temporarily benefited, and a very conservative estimate of absolute cures may be placed at almost 50 per cent. Contra-indications to surgical intervention are a miliary tuberculosis, active tuberculous lesion elsewhere, pleurisy, the ulcerous form with emaciation and prostration, and the fibrous form. Simple incision is not sufficient, the exudate must be completely removed, but without injury to the intestines; drainage is not desirable and may be dangerous, irrigation is not

essential, and foci of infection should be removed if section can be made through healthy parts. In comparing the mortality of cases treated medically with those operated upon, Shattuck has shown the former to give a mortality of 68 per cent. against that of 37.5 per cent. for those treated surgically.

W. D. B.

MEDICINE.

UNDER THE CHARGE OF F. G. FINLEY, H. A. LAFLEUR AND W. F. HAMILTON.

A. O. J. KELLY. "Infections of the Biliary Tract, with special reference to Latent (or masked) and Typhoid Infections." Certain Remote consequences of infections of the biliary tract, with special reference to (1) Cholelithiasis and Cholecystitis; (2) Adhesions of the Upper Abdomen; (3) The General principle of Treatment; (4) The Indications for Surgical Intervention. *American Journal of the Medical Sciences*, September, 1906; November, 1906.

The infectious agents are usually motile bacteria as the bacillus *c. communis*, and bacillus typhosus, and to a much less the non-motile forms, streptococci and staphylococci. Biliary infections complicating pneumonia and influenza suggest the possibility of the pneumococcus and the influenza bacillus respectively, as the etiological agent, but as far as Dr. Kelly knows, these organisms have not been isolated from the local lesions.

The paths of infection are (1) the diverticulum of Vater and the common bile duct; (2) the portal circulation; (3) the systemic circulation; (4) the lymphatic circulation; (5) directly through the wall of the gall bladder or the gall ducts from the peritoneum.

Of these channels of infection the portal circulation seems to be the most frequently traversed by infecting agents. While the mechanism of infection by way of the diverticulum of Vater and the common bile duct is difficult to understand, yet it would seem that in the past the importance of this source of infection has been overestimated. The other methods, viz., by way of the systemic circulation, and the lymphatic circulation, while they are not to be ignored, are comparatively rare.

The latent or masked infections are studied from the point of view of typhoid infections since the great majority of them are due to the typhoid bacillus. An important suggestion in this connexion is made by Mr. Kelly concerning typhoid fever epidemics. There may be, and doubtless there is, in many cases a continuous re-infection of the intestinal tract by the frequent discharge of virulent typhoid bacilli from a chronically infected gall bladder. The individual is apparently

healthy and yet he may spread the infection. The biliary infection though acute and occurring during the course of typhoid, may be quite latent clinically. Dr. Kelly has come to regard nausea during the course of typhoid fever, when not due to other obvious causes, as quite significant of gall-bladder infection.

The relation of Gruber-Widal reaction to cases of jaundice is more easily explained from the point of view that jaundice results from former typhoid infections, and the serum reaction may be present years after the febrile course is ended. Typhoid infection of the biliary tract may yet explain many of the ill-understood forms of jaundice—the so-called febrile jaundice, infectious jaundice and Weil's disease.

Among the symptoms of cholecystitis pain is to be regarded as due to an acute active infection. This may be of the nature of colic and lead one to suspect the passage of gall-stones. The fever must also be explained in the same way—a manifestation of infection.

Those adhesions so commonly found post-mortem in the upper part of the abdomen originate chiefly with infections in the biliary tract. Their diagnosis is most difficult and can be made only by excluding factors causing similar symptoms.

The general indications of treatment may be considered under three heads: (1) to cause solution of the stone or stones; (2) to cause the discharge of the stone or stones, and (3) to treat the complicating infection. The solution of gall-stones is scarcely the object of rational treatment. There is but little if any trustworthy evidence that gall-stones are ever dissolved. Naunyn, in discussing this point, suggests that the action of bacteria accounts for the disintegration of the stones. In treating the complicating infection the object is to restore the condition of latency. This may be done by promoting the free flow of bile. Infecting bacteria and their toxins are thus eliminated. Surgical intervention is indicated in the event of an acute intestinal obstruction in a cholelithitic subject, or in a patient in whom adhesions are suspected. It is indicated also by a persistently enlarged gall bladder, in impacted gall-stone with chronic jaundice, and in these obscure cases usually diagnosticated indigestion, gastralgia, recurring vomiting, etc., in which with reasonable certainty the presence of peri-cystic, peri-gastric or peri-duodenal adhesions may be surmised.

LEONARD S. DUDGEON. "A Study of the Various Changes which Occur in the Tissues in Acute Diphtheritic Toxæmia, more especially in reference to Acute Cardiac Failure." *Brain*, No. 114.

A valuable addition to our knowledge of the important changes due to diphtheria infection has been made by comparing the results of the

pathological investigations in human cases with those found in inoculated animals. While the views of Flexner, Vincent, Müller and others in many points have been confirmed, it appears that by Dudgeon's work some valuable points have been gained. The paper repays a careful perusal, but in this connection a summary of results must suffice.

(1) The most important lesion in the acute cases is a fatty change of the heart muscle and diaphragm, which is due to a direct action of the toxins on these tissues.

(2) Similar fatty changes may be found in certain of the important viscera, more especially the adrenal gland and liver.

(3) The expression "Cardiac paralysis" in acute diphtheritic toxæmia should be abolished and be replaced by "Acute cardiac failure."

(4) The changes found in the nervous system are secondary factors and not the primary cause of the cardiac failure.

(5) The antitoxin, if given in sufficient quantity and within the first forty-eight hours, may prevent, or at any rate will considerably diminish the possibility of death from cardiac failure.

A. F. MARTIN. "The Significance of some Enlargements of the Thyroid Gland." *The British Med. Journal*. September 22, 1906.

On the relation of thyroid enlargement to endemic causes, Dr. Martin summarizes his conclusions:—

1. The only common condition to all cases is the water, ...
2. The water in no case has shown much total solid impurity.
3. It is seen that cases have occurred indiscriminately on sandstone and millstone grit.
4. If there is an endemic influence it is not contained in the lime and magnesium constituents, many waters being harder and producing no goitre.
5. Its action is only a slight one and may accentuate the changes in the gland due to causes primarily mentioned.

The writer draws the following conclusions concerning other causes:—

1. That a call for increased functional activity is sufficient cause for simple enlargement of the thyroid gland.
2. That such a call is frequently given by the metabolism of the organism in connexion with growth and development, with the performance of the uterine functions in the female, and with chlorotic conditions in young girls.
3. That the phases of enlargement of the thyroid included under the term "thyrocele" are a response to such an appeal from one or

more of the above causes in an individual whose thyroid function is feebly performed.

4. That an undue physiological activity is a potent cause for pathological change, so this simple hypertrophy, when necessitated for prolonged periods lays the foundation of the pathogenesis of the degenerate cystic and adenomatous bronchocele.

5. That there is often some influence exerted by heredity upon the thyroid function.

CLAUDE B. KER. "Antisepsis and Asepsis in the treatment of Typhoid Fever." *The Edinburgh Medical Journal*, July 1906.

"Jez,—Antityphoid Extract in Enteric Fever." *Wiener. k-thera. Wochens.* No. 51. 1905.

"Chantemesse." *La Presse Médicale*. February, 1906.

In the experience of Ker beta-naphthol is regarded as the most efficient intestinal antiseptic. Given in doses of from 6 to 9 grains every four hours throughout the fever there has been found no reason to believe that it in any way damages the kidney even though the urine becomes very dark coloured. While this is true there seems to be no proof of any specific action of the drug in lessening the duration of the fever, the progress of the ulceration or the occurrence of relapses. The same may apply to other intestinal antiseptics, excepting, perhaps, calomel, which Ker regards with favour.

Queirolo's method of rectal feeding preceded by irrigation of the bowel with a solution of boracic acid, the only drink allowed being "a lemonade made with hydrochloric acid, and Williams' starvation system of a half pint of milk in twenty-four hours, with plenty of water until the temperature reaches normal, have this to be said in their favour, that rest to the bowel is secured. Williams' method carried out in the Southern Hospital at Liverpool has shown good results. In addition to the low diet, persisted in for three weeks after the temperature becomes normal, half grain doses of calomel or two drachm doses of castor oil to move the bowels, are administered from time to time. The motto of Ewart in feeding typhoid patients is "plenty of food and no fæces." He gives two and a half pints of well salted peptonized whey in twenty-four hours, supplemented later by cream, sugar, eggs, vegetable broths, and fruit jellies. Such a diet leaves little or no residuum. Besides, giving charcoal freely, Ewart gives one-eighth grain of calomel every six hours and 2 drachm of liquid paraffin every four hours as a lubricant for the bowel and in order to exercise a healing effect upon the ulcers.

Ker's method is to secure antisepsis as far as possible by elimination and so far he is a disciple of Liebermeister. Calomel in doses of

from three to five grains (usually three grains) is given every second or third day and followed in from six to seven hours by irrigation of the large intestine with three to five pints of hot water. The calomel is given with the object of preventing stagnation in the ileum and at the same time any antiseptic action which it possesses may be of service. Ker believes that the calomel empties the small intestine into the large and the irrigation of the large intestine removes its contents and prevents the colicky pains and diarrhoea, so often experienced when calomel is given alone.

Calomel is contra-indicated in marked meteorism; when there is blood in the stool and when the temperature is running in almost a straight line with no remission, suggesting deep ulceration and threatened hæmorrhage and perforation.

The irrigation is slowly given with water boiled and at a temperature of 116° to 120°F. in the can raised only slightly above the level of the patient lying upon the left side with hips slightly raised. The fluid is retained as long as possible and then about two-thirds of it is passed, a second motion following later.

The diet given by Ker consists chiefly of milk, two pints and under in twenty-four hours. It is given with hot water in the proportion of two parts of milk and one of hot water. Water is given in large quantities.

In comparing the irrigation and calomel treatment with the so called expectant treatment, the diet in each series being the same except that in the irrigation and calomel series the patient was fed more liberally in early convalescence, a showing favourable for the antiseptic treatment is observed.

The statistics cover nine years and include 1,165 consecutive cases of enteric fever.

There were 397 cases treated by expectant plan with 11.83 per cent. of deaths, 8.06 per cent. of hæmorrhages, and 3.27 per cent. of perforations, and 5.79 per cent. of relapses; while 758 cases were treated by calomel and irrigation with 9.36 per cent. of deaths, 8.04 per cent. hæmorrhage, 1.71 per cent. of perforations, and 3.95 per cent. relapses.

Jez recently adds four case reports to the 100 previously reported, as having been treated by his antityphoid extract, given hypodermically or by the mouth. There are said to be no contra-indications to its use. There is an opinion growing in favour of its use. It is claimed that patients treated in this way experience a relief of all the symptoms, and the course of the fever is shortened from one to two weeks. This method however, is scarcely on trial as yet.

The method practised by Chantemesse in his hospital at Bastion 29 Paris and yet altogether in the hands of the inventor of the "anti-

toxine" has been reported upon as giving most satisfactory results, lessening the signs of toxæmia, promoting elimination, shortening the course of the disease and lowering the percentage of mortality in a very decided manner. So far as it is new, for Chantemesse applies the methods of his colleagues, baths, liquid diet, etc., it consists in the hypodermic administration of one dose of from three to five minims of typhoid-antitoxine, or serum early in the disease. So far as the profession is concerned this serum is unobtainable and all reports with one or two exceptions (M. Josias*) are from the observations of Chantemesse himself, who promises that when well tested he will give it to the profession.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

ADLER AND HENSEL. "Intravenous Injections of Nicotine and their Effects upon the Aorta of Rabbits." *Jour. Med. Research*, 1906, xv, p. 229.

The authors treated rabbits, by the intravenous inoculation of nicotine, for a period of eighteen to one hundred and ten days. Mercks' product was used in doses of one-third cubic centimetre of the one in two hundred solution. About ten seconds after each inoculation the animals had violent convulsions which, however, cleared off in three to five minutes. The animals developed no tolerance for the drug, and the convulsions occurred after each treatment with undiminished severity. The development of vascular lesions varied in the different animals.—in one case, naked-eye changes were present after eighteen injections, while in another nothing was found after one hundred and ten doses. The lesions which do occur are similar to those produced by adrenalin, that is, there is extensive degenerative change in the media, affecting chiefly the muscle cells, which later become calcified. The intima shows no degenerative change. The authors believe that the arterial lesions are of a degenerative nature, a kind of necrosis, and they do not lay much stress on the rôle of the heightened blood pressure. The intima, they find, may show proliferation, so that this layer becomes thickened over the damaged media. The authors refrain from any decided opinion regarding the relation of these lesions in arterio-sclerosis in man.

NEUMANN. "Peptic Ulcers of the Stomach, Post-mortem and Pseudo-vital Auto Digestion." *Virchow's Archiv*, 1906, Bd. 184, Heft. 3.

The author attacks the subject from rather a critical standpoint, and does not side with any of the previous theories. The crux of the question, he points out, rests in whether living tissues can be digested by the gastric juice or its hydrochloric acid. The author believes that only such tissue which has been previously damaged is attacked by pepsin or trypsin, and that normal tissues possess a certain immunity against acids. Hence the stand must be taken that all tissues have a vital resistance to auto-digestion up to a certain degree. What then is the primary force which causes necrosis or other change in the stomach wall, which secondarily leads to the round ulcer?

The author does not support Virchow's contention of isolated mucosal degeneration due to vascular changes, nor the view of Klebs that anæmia of the stomach results from spasms of its vessels. Matthes pointed out that hyperacidity of the stomach juice prevented healing taking place in lesions, and held that this was an important factor in the production of a peptic ulcer. Neumann, however, finds that some cases never have hyperacidity, and further, that gastric ulcers do heal in the presence of hyperacidity.

He does not see in definite vascular disease or thrombosis a reason for peptic ulcers, but would rather support Nanwerck's findings of bacterial emboli, to explain the lesions. He points out that the occurrence of multiple ulcers, the finding of "contact" ulcers, and of simultaneous lesions in the duodenum are in support of a bacterial cause of the disease.

O. K.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held Friday evening November 2nd, 1906, Dr. F. G. Finley, President, in the Chair.

CONGENITAL DISLOCATION OF THE HUMERUS IN AN INFANT.

This case was presented by Drs. Hamilton White, A. MacKenzie Forbes and C. K. Russel, the report of which will be found on page 804 of this number of the JOURNAL.

A. E. GARROW, M.D.—I have not seen this form of dislocation of the humerus before. Since the history given by the writer would indicate

that the dislocation occurred during birth, I would class it among the traumatic dislocations, rather than among the congenital. Owing to the cartilaginous structure of the joint involved I fear the X-rays will throw but little light on the difficulties to be met with in reposition, and hence on the prognosis.

A. MACKENZIE FORBES, M.D.—I think in my remarks I have particularly set forth that it was not as likely to be a pre-natal misplacement as a congenital dislocation, in other words a dislocation accompanying, or depending upon, birth.

OPERATION OF PUBIOTOMY.

D. J. EVANS, M.D.—Reported a case in which he had performed this operation with successful results. The patient was brought before the Society for examination. Dr. Evans illustrated the operation by the use of charts and exhibited the instruments used.

J. C. CAMERON M.D.—Dr. Evans is to be congratulated on the result of his operation. It certainly seems to have been an ideal case for Pubiotomy. The estimate which was made beforehand of the pubic dimensions, was very accurate; the Conj.-Vera estimated at 8.5 cm. was found to be 8.6 cm. by actual measurement when the patient was examined for discharge. After listening to the report of this case the first question which we should probably ask ourselves is, whether the result was better than it would have been had C. Section been performed, and if so, in what respects. In my opinion that woman left hospital in far better condition than she would have done had C. S. been done, and moreover the child was living and in good condition. The C. Section operation would have been a Porro; the patient would have been mutilated even if she had recovered, and the child would probably have perished on account of the time lost in dealing with the adhesions.

The chief value of Pubiotomy seems to be the narrowing of the field for C. Section, especially for the *relative* indication. Of course there can be no question of pitting it against C. Section for the *absolute* indication. In minor degrees of pelvis contraction at the brim, pubiotomy will be of the greatest service; but the smaller the C. V. becomes, the more dangerous will the operation be for the child. Here in this case we have a pelvis with C. V. of 8.6; the child was born asphyxiated and was resuscitated with difficulty; if the C. V. had been 1 cm. less or had it been 7cm. which is usually regarded as the lowest limit, there can be very little doubt that the child would have perished, and what gain would there have been over the results of previous deliveries where Craniotomy was done? It would seem therefore, that Pubiotomy is to be preferred in cases of slight or moderate contraction of the brim.

With regard to the method of performing the operation, there are several practical points which this paper brings up. First, with regard to the amount of enlargement of the C. V. obtained by means of the operation. It has been the clinical experience in Germany, confirmed by Röntgen ray photographs, that the closer the incision is made to the Symphysis, and the more nearly parallel it is to the middle line, the greater will be the widening of the cut ends and consequently the greater the gain in the C. V. Conversely when the incision is made three or four fingerbreadths from the Symphysis or in a line oblique to the central line of the joint, the gain will be correspondingly less. If I had occasion to operate on a case where the C. V. was below 8 cm., I should take great care to make the incision as near as possible to the symphysis, and parallel to the middle line.

With regard to the subcutaneous method, I very much question whether it is altogether an advantage. There is always considerable effusion of blood after the bone is sawn through, and it must go somewhere. If it is not allowed to escape, it will form a hæmatoma more or less extensive in the labia or elsewhere; but if it is allowed to escape through a small opening, such a hæmatoma is not so likely to form, and the hæmorrhage need never be severe, for it can be checked promptly by packing some moist gauze into the wound. Our experience here with Symphysiotomy has been that the best results are obtained by one small incision down upon the top of the Symphysis, through which the finger can be passed, the knife guided during the cutting, and the operation done almost subcutaneously. It seems to me that the same technique applied to Pubiotomy should give equally satisfactory results. Another point which struck me in this case was made before discharge from hospital, the uterus was found to be in good position, and the soft parts involuted and in excellent condition. In our symphysiotomy cases, although the patient seemed to be in good shape when discharged from hospital, prolapse and subsequent troubles developed. The good success in this case was attributable largely, I think, to the fact that the patient was kept so long in bed, and that involution had a chance to be well established. In the earlier days, there was great haste in getting patients up and out of hospital; experience has proved that to have been a mistake in Symphysiotomy, I think that it would be equally a mistake in Pubiotomy. This case is extremely interesting from many points of view, and I think we may safely conclude that in Pubiotomy we have an operation which has a definite field, and that it limits considerably C. Section for the relative indication, especially in flat pelves where the flattening is only slight or moderate; but where the flattening is extreme,

Pubiotomy is too dangerous for the child and C. Section is to be preferred.

D. J. EVANS, M.D.—I quite agree with Dr. Cameron's remarks in regard to the indications for the operation being the smaller degrees of pelvic contractions and not the more marked degrees. For the latter probably Cæsarean section will always hold its place. The danger of incising the pelvic bone close to the middle line, has been that the lack of nourishment to the small fragment may lead to its necrosis or its non-union, but that is a theoretical objection which hitherto has never been recognised in practice.

PRIMARY CARCINOMA OF THE APPENDIX.

A. E. GARROW, M.D. and C. B. KEENAN, M.D.—Dr. Garrow read the report of this case.

THE SO-CALLED INFANTILE PARALYSES.

A. MACKENZIE FORBES, M.D. read the paper of the evening upon "The So-called Paralyzes of Infants."

A. E. GARROW, M.D.—I would like to ask if the author has had any practical experience with transplantation or grafting of nerves into the paralysed trunks, to secure improved nerve tone to the paralysed muscles.

W. F. HAMILTON, M.D. I would like to ask whether children born prematurely, and yet viable and live fairly healthy lives, are more liable to anterior poliomyelitis than other children. About a year ago I saw a child six months of age who had been born about a month prematurely. She had recently suffered a febrile attack subsequent to which there developed definite signs of poliomyelitis involving the left leg to a considerable extent and then gradually developed a complete disability in the use of the lower extremity. It was such a case as I had never seen before, the earliest development, so far as I know, of the lesion known as anterior poliomyelitis. It occurred to me that the premature birth may have had some influence in determining the early incidence of the disease.

A MACKENZIE FORBES, M.D. With reference to Dr. Shirres's remarks about electricity: I think this should be used as should all agents from which any benefit can be derived but, perhaps, I am a little prejudiced in favour of massage: as he is, perhaps, a little prejudiced in favour of electricity. As far as Dr. Hamilton's question is concerned, I have never heard of a similar case to the one quoted by him. In answer to Dr. Garrow's question: I have had no practical experience with nerve transplantation, because it has not as yet been proved to my satisfaction that one is justified in using it except in exceptional cases.

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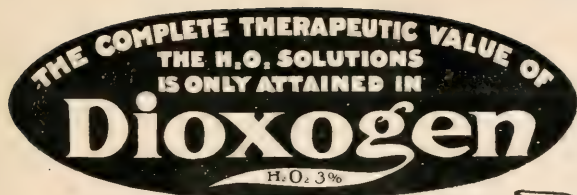
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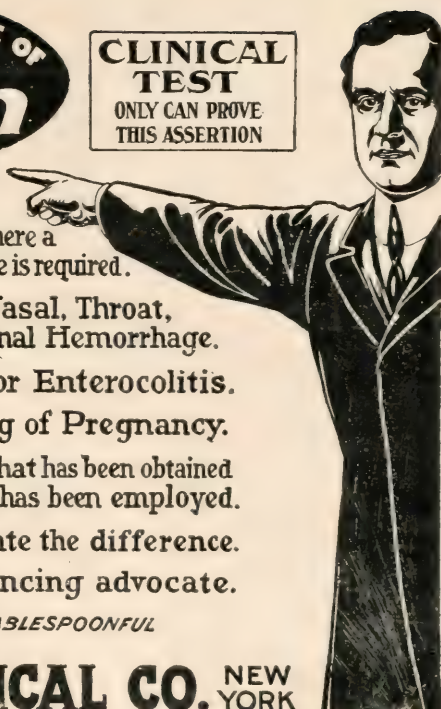
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All fluid pancreatic preparations are devoid of lipase (fat-splitting enzyme) a constituent of such importance that it cannot be ignored in many cases in which it is desired to utilise the pancreas gland secretion in medicine.

HOLADIN is put up in gelatin capsules (automatically filled), each containing approximately three grains. The usual dose is one capsule about three hours after meals, and one at bedtime. In cases of constitutional disease or in serious disorders of digestion attributed to faulty pancreatic functioning, the dose may be gradually increased to two or three capsules at a time.

HOLADIN, by the U. S. P. method of assay, exhibits at least four times the starch-converting power of "Pancreatin" U. S. P., 1900, and far exceeds in saccharifying power any diastase of commerce.

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